PAINT and VARNISH Production

THE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHES

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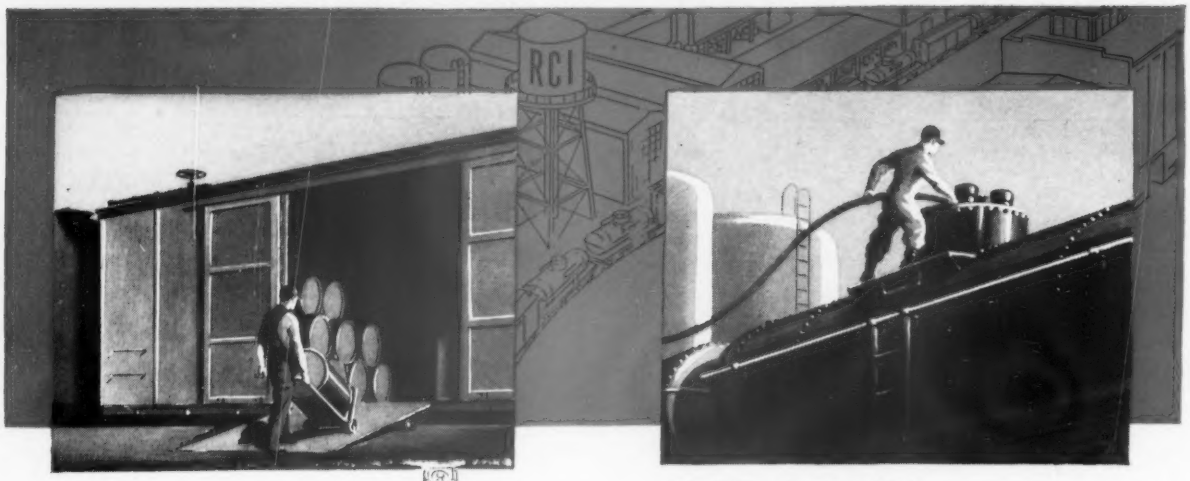

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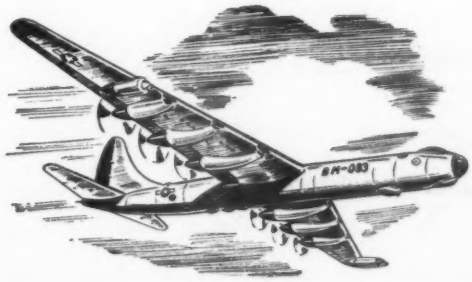

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PAINT and VARNISH Production

Formerly PAINT and VARNISH PRODUCTION MANAGER
(Established in 1910 as The Paint & Varnish Record)

VOL. 41 JUNE 1951 NO. 6

NEXT ISSUE

The evaluation of coatings for surfaces subject to immersion in fresh water will be featured in the July issue. This article deals with the various aspects of evaluation employed by the Rock Island District in evaluating protective coatings, especially the vinyl systems, for structural steel components of Civil Works Structures of the Corps of Engineers.

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Published Monthly by Powell Magazines, Inc.
Executive and Editorial Offices
855 Ave. of the Americas
New York 1, N. Y.
BRyant 9-0499

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PAINT and VARNISH PRODUCTION is published monthly at 10 McGovern Ave., Lancaster, Pa., by Powell Magazines, Inc. John Powell, president; Ira P. MacNair, vice-president and treasurer; Alice L. Lynch, secretary. Entered as second-class matter, November 16, 1949, at the Post Office at Lancaster, Pa., under the Act of March 3, 1879. Subscription rates: United States and Possessions, $3.00 a year, $5.00 for two years, $10.00 for five years. Canada, $4.00 a year. Pan American Countries, $4.00 a year. All other countries $8.00. Editorial and business office: 855 Avenue of the Americas, New York 1, N. Y. BR-9-0499.

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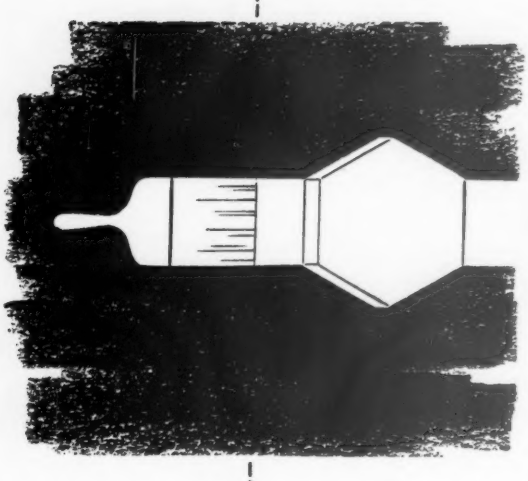

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Editorial Comment

Technical Manpower

PRESENT practice of the federal government in refusing to exempt highly trained technical men in certain vital defense industries such as the paint and varnish industry "should be corrected".

This view was expressed recently by A. D. Duncan, vice president of the Glidden Company.

He said "there is always a scarcity of highly qualified technically trained personnel" for the development of new products in the paint and varnish industry, which is of utmost importance in the nation's defense program.

Mr. Duncan further pointed out that unlike conditions prevailing in World War I and early World War II, the paint business has become a highly developed chemical industry, and its research and formulations reach deeply into the critical chemical field. Paints, as they were known twenty-five years ago, were made from natural raw materials such as imported fossil gums. This no longer holds true. As a result, paint to-day is of a much higher quality. Research for producing to-day's high quality paint demands well trained technical men, who must receive at least five years of training in an industrial paint laboratory after graduation with a degree in chemistry.

Due to the present emergency, the paint industry like most other industries is suffering from lack of highly technically-trained engineers and chemists.

The need for scientific and technical personnel in Government, principally the Department of Defense has caused a drainage of key engineers and scientists from both industry and universities. It has been estimated that some 190,000 technical personnel will be needed in carrying on the research activities planned by the Department of Defense and the Atomic Energy Commission. Thus, both industry and government agencies including the military have been urged to work more closely in order to obtain a maximum utilization of all available technical manpower.

The continuance of engineering and scientific education to meet the demands of both industry and Government must be assured. It is hoped that the military will adopt a realistic policy regarding the deferment of students pursuing engineering and other scientific studies. On the other hand, industry would be wise to examine all technical job classifications and where possible break these jobs down to permit replacements of technical positions with non-technical personnel. Special training courses can be arranged to prepare women for routine analytical work and assisting in the laboratory. Due to smaller graduating classes and more men going into the armed services, the estimated quota that 25 percent more graduate engineers are needed for industry's training program seems unlikely to be fulfilled in the very near future.

A suggestion set forth by Eric A. Walker, School of Engineering, Pennsylvania State College, at the second Industry-College Conference in Cleveland merits comment here. Mr. Walker feels that a partial solution lies in further utilizing the personnel and laboratory facilities of our universities and colleges in the Military and Development Program. Since many universities are now playing an important part in this program, chances are that additional Research and Defense contracts will be planned for which prospective contractors are not immediately available. Furthermore, research and development which will take place in the next few years will emphasize the completion of items already in the "blueprint" stage, and the development for production and use of items well on their way to completion. Thus, our engineering schools can meet the problem in part by organizing research teams and seeking Research and Defense contracts from the military. Universities on the other hand, will greatly benefit from such an arrangement in that they may be assured of financial assistance which will aid in maintaining their teaching staff during the present emergency.

ROTARY PUMPS FOR THE PAINT AND VARNISH INDUSTRY

ELLIOTT M. RICHMAN
Worthington Pump and Machinery Corp.

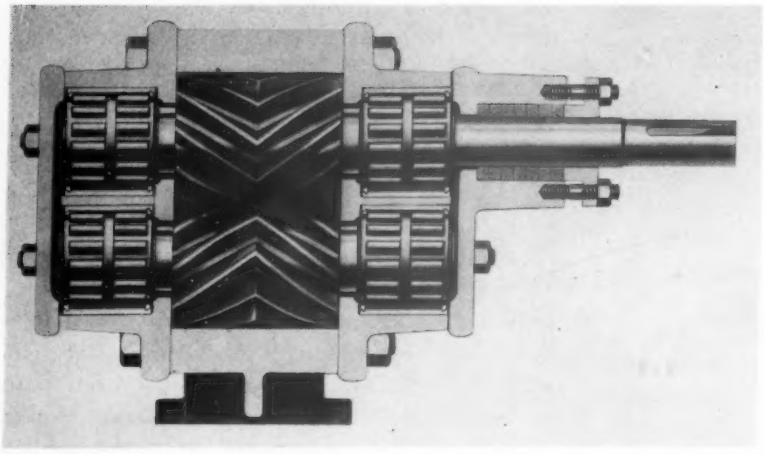


Figure 1. Working parts of heavy duty internal bearing rotary pump with herringbone gears.

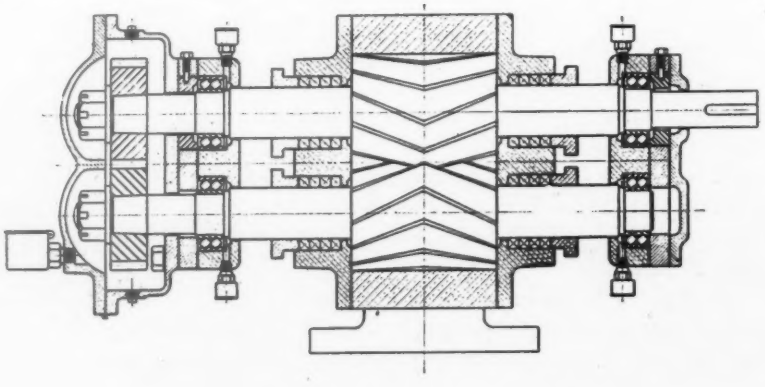
THE widespread application of rotary pumps in the paint, varnish, and allied industries indicates that a discussion of this type of pump would be of interest. It is not our purpose, at this time, to delve into the intricacies of the various types of rotary pumps but to discuss the operation of these pumps in general.

Basically, rotary pumps can be classified into various groups primarily differentiating between the rotor design or actual pumping elements: For example, gear, (see fig. 1) vane, lobe, screw types, etc. They all act on the principle of positive displacement pumping, that is, for every revolution of the pumping element or elements there is displaced a certain quantity of liquid regardless of the type of liquid being pumped.

Along with the advantage of positive displacement pumping, most rotary pumps are capable of self-priming. They will pump air along with the liquid until the suction line is completely full and normal pumping takes place. This is of particular advantage when suction tanks are submerged or when portable pumping units are used and it is not always possible to have a positive head on the suction.

A common expression when referring to rotary pumps is that "they will pump anything from gasoline to black strap molasses". Due to the large suction and discharge openings in most rotary pumps, the lack of obstruction to flow, and because they are positive displacement machines, they will pump any liquid that will flow. It is safe to say that if a liquid can be introduced into the suction of the pump, either by gravity or by a pressure of some kind, it will be pumped. Rotaries have been known to pump liquids having viscosities as high as 500,000 Saybolt Universal Seconds.

Figure 2. Rotary pump with external bearings.



Life

ROTARY pump life depends upon various factors. Because of the close clearances between the moving parts, wear is an important factor to be considered. In most cases, the internal pumping elements and the bearings depend upon the liquid being pumped for lubrication. Even if the bearings are externally located with separate means of lubrication, a liquid with poor lubricating qualities will shorten the life of a rotary.

By far, the most serious cause of pump wear and the resultant short pump life, however, are abrasive liquids, or liquids having solid particles in suspension. In some heavy, viscous paint pastes containing silicate particles, this has been a serious problem for some time. While it has been generally acknowledged that close clearance pumps will wear when handling abrasive liquids, it is desired to prolong the satisfactory pump life on this service as much as possible. As mentioned previously, situating the bearings so that they do not come in contact with these abrasives is a great help. This has been done in several ways, either by installing seals of some type between the pumping elements and the bearings for mild abrasives, or externally locating the bearings (see fig. 2).

As far as the casing and pumping elements of the pump itself are concerned, these can be supplied of hardened materials of various descriptions. In connection with this, and in order to make the replacement of worn parts as simple and economical as possible, the pump casings can be supplied with replaceable, hardened liners. In view of the low initial cost of most standard rotary pumps, however, it is in many cases desirable to keep spare pumps on hand, so that shut-down-time and maintenance costs be kept to a minimum.

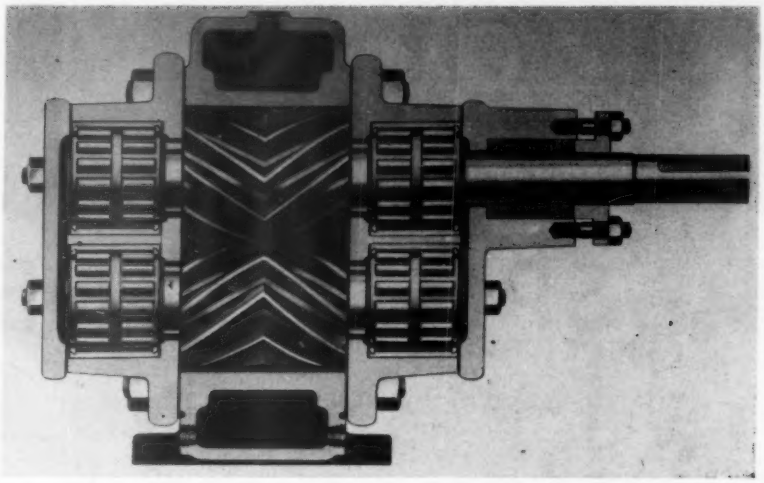


Figure 3. View shows working parts of rotary pump with steam jacketed body.

While most standard rotary pumps are constructed of cast iron and steel, special materials of construction can be supplied for corrosive liquids.

Care and Maintenance

EXTREMELY abrasive and corrosive liquids are not generally encountered and standard rotary pumps are used very effectively on paints, lacquers, oils, synthetic resins, varnishes, and other liquids used in the manufacture of paints and allied products.

In pumping various paints and varnishes, the stuffing box packing should be given careful consideration. The only leak proof stuffing box arrangement entails the use of a mechanical seal. The most commonly used seals, however, have synthetic rubber parts of some type, be they "O" rings, bellows, closures, etc. Therefore, when considering the use of a seal, it is important to check whether the pumping temperature of the liquid is not too high (usually 240° to 250° F.), whether the solvents present in the product will attack the synthetic rubber, or whether any abrasives such as silicates, etc., are present which will damage the finely polished sealing surfaces.

Where seals are not applicable, stuffing box packing is generally acceptable. This packing is available in a multitude of sizes and materials and the proper packing should be selected for any particular liquid, either through the pump manufacturer, or by consulting a local packing representative. If packing is installed correctly, if the stuffing box gland is periodically inspected, adjusted, and if the packing is replaced when necessary, excessive leakage, which in some cases may result in a costly shut-down, will not occur.

In high temperature applications where the liquid is apt to solidify when allowed to cool during shut-down periods, or when pumping paints containing volatile solvents, precautions should be taken so that solidification does not take place in the internal parts of the pump: rotors, bearings, packing. If this occurs and the pump is started up in this condition, serious internal damage can take place. To avoid this, it is recommended that the pump be

(*Turn to page 45*)

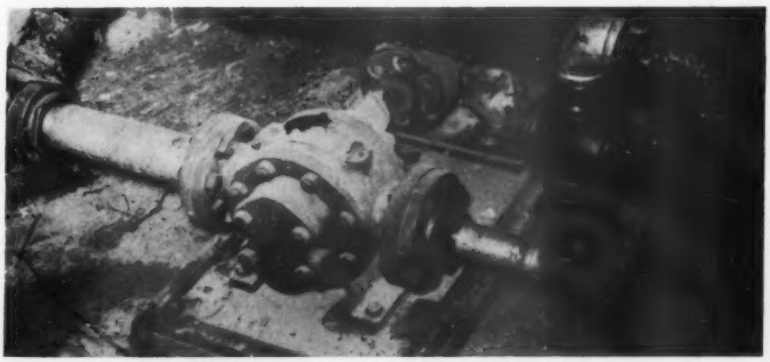


Figure 4. Rotary pump handling resin solutions at the Pittsburgh Plate Glass Co. in Newark.

THE USE OF SPECIAL SHELLAC IN METAL LACQUERS

BY

R. W. JAMES
Arthur D. Little, Inc.

MICHAEL GALASSI
William Zinsser & Co.

IT IS generally known that shellac has remarkable adhesion to metal and has been used in nitrocellulose lacquers to increase both adhesion and flexibility. Its widespread acceptance in this use has been resisted because ordinary dewaxed white shellac in optimum quantities cannot be used with many of the solvent mixtures employed in nitrocellulose lacquers. However, in its manufacture, dewaxed white shellac can be modified so that it has a greater tolerance for the non-solvent or diluent and can, therefore, be used in quantities sufficient to give the desired results. Recently, a specially processed and standardized liquid white dewaxed shellac has been produced ("Zinflex") that has the desired properties and will tolerate 50% more dilution with hydrocarbons than any ordinary liquid white dewaxed shellac.

This work shows that the improved liquid white dewaxed shellac will tolerate a greater volume of hydrocarbons and, as an additive to nitrocellulose lacquers, improves adhesion and flexibility without impairing the hardness.

Based on the comparisons between laquers containing this special shellac and lacquers formulated with other fortifying resins, the following conclusions have been made:

1. The lacquers containing the processed shellac adhere better to metals such as aluminum, brass, tin plate and steel. In the case of steel, the adherence is still a great deal better.
2. For films having the same degree of flexibility, those containing processed shellac sand better and are harder.
3. For films having equivalent hardness values, those containing processed shellac are more flexible.
4. The build of the shellac containing laquers is better than the recommended metal lacquers.

Toluene Dilution Tests

THE curves in Figures 1 and 2 compare the effect of diluting ordinary liquid white dewaxed shellac and the processed shellac liquid white dewaxed shellac (diluted to 4 lb. of solids per gallon) with toluene and Solvesso #100.

Since shellac is insoluble in the common hydrocarbons, it might be expected that the addition of these compounds to the alcoholic solution of shellac would cause precipitation, and of course this is substantiated by experience. As might be expected, an alcoholic solution of shellac is more tolerant to some hydrocarbons than to others but for this purpose only the two commonly used diluents are reported.

In Figure 1, it is apparent that the processed shellac will tolerate 1.7 times as much toluene as ordinary white dewaxed solution and from Figure 2, 1.5 times as much Solvesso #100 as ordinary white dewaxed shellac. Generally speaking, this material will tolerate 50% more dilution with hydrocarbons than will the ordinary 4 lb. cut white dewaxed alcoholic shellac solution.

The adverse effect of ordinary prepared shellacs is more strikingly illustrated by Figures 3–8. These films were made from lacquer solutions of identical composition except that in Figures 3 and 5 the solutions contained ordinary white dewaxed shellac, whereas in Figures 4 and 6 the processed material was used.

In all the solutions described herein, the solvent to non-solvent ratio

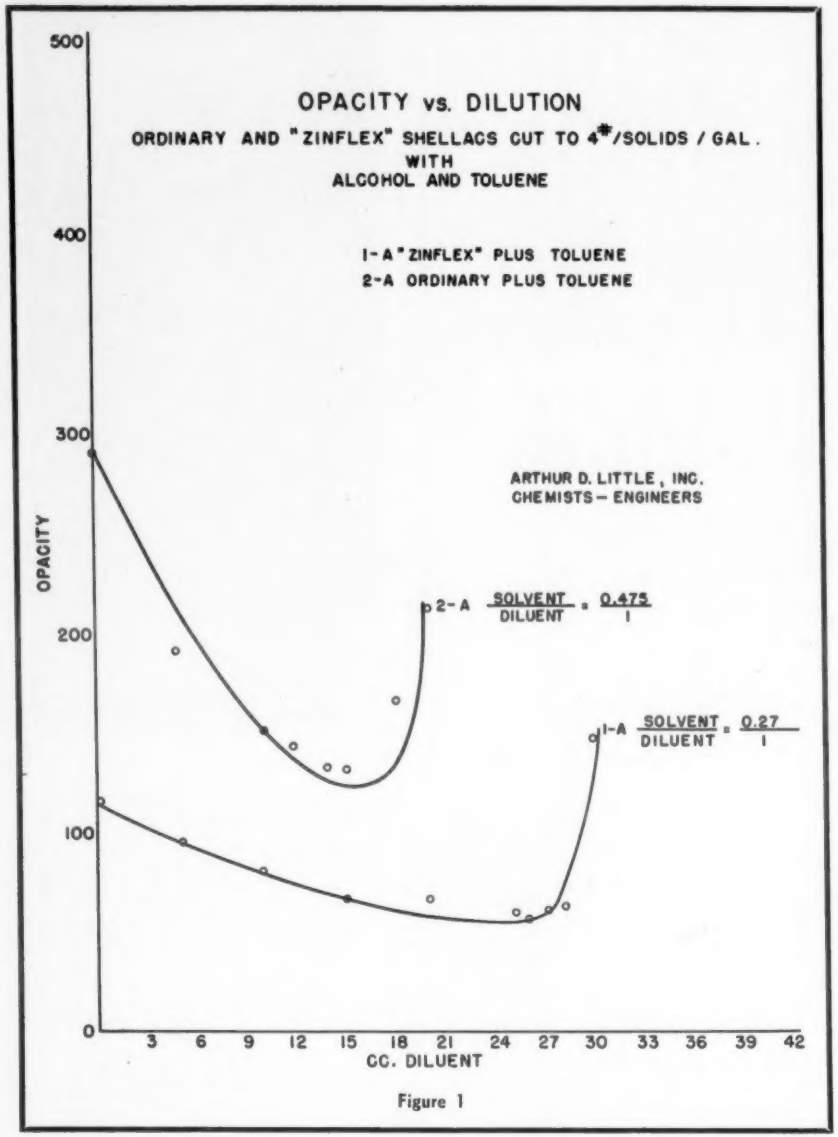


Figure 1

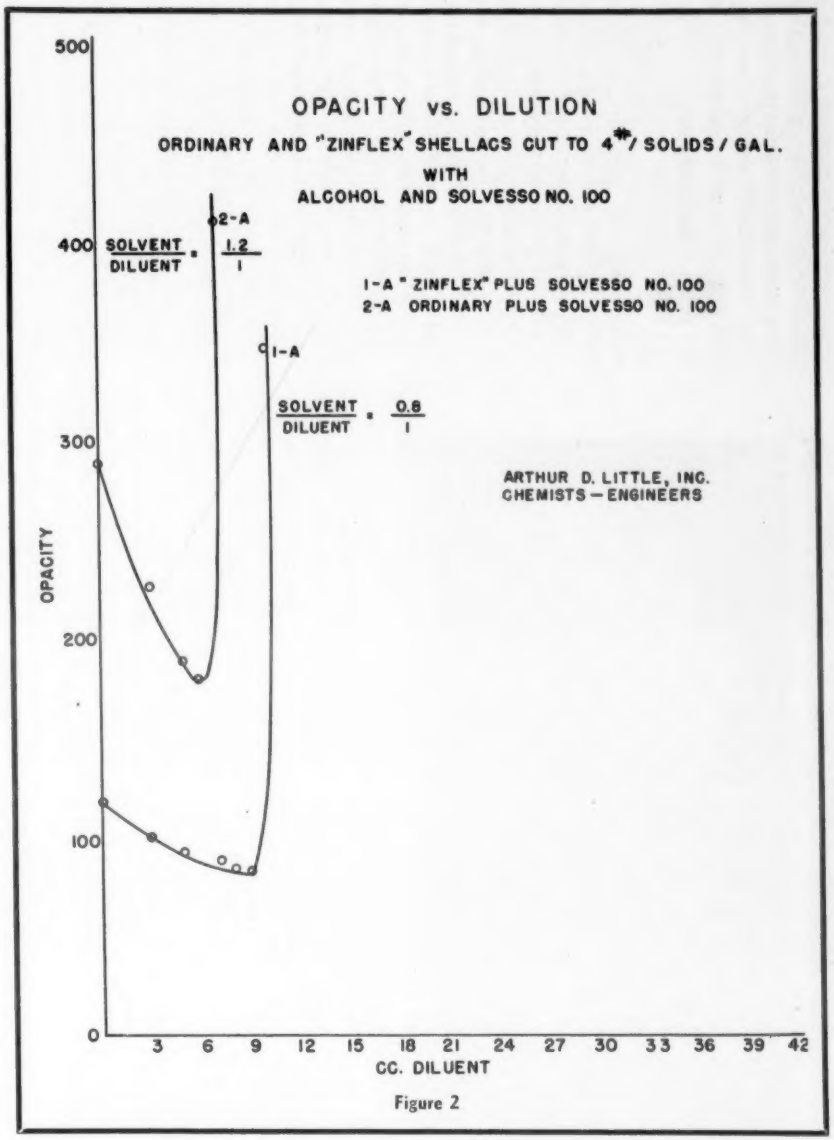
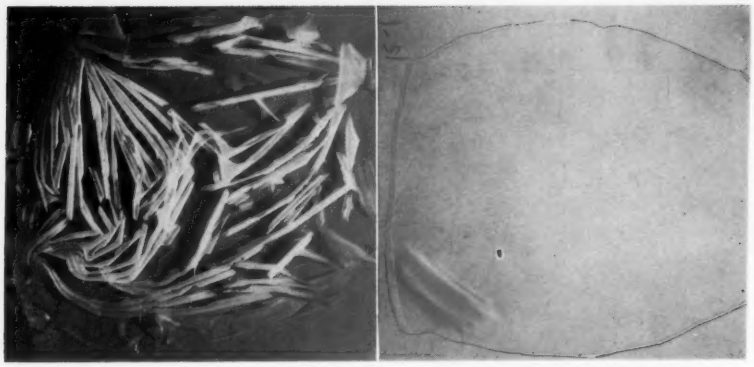

OPACITY vs. DILUTION
ORDINARY AND "ZINFLEX" SHELLACS CUT TO 4#/SOLIDS / GAL.
WITH
ALCOHOL AND SOLVESSO NO. 100
1-A "ZINFLEX" PLUS SOLVESSO NO. 100
2-A ORDINARY PLUS SOLVESSO NO. 100
ARTHUR D. LITTLE, INC.
CHEMISTS – ENGINEERS
2-A SOLVENT / DILUENT = 1.2 / 1
1-A SOLVENT / DILUENT = 0.6 / 1
OPACITY
CC. DILUENT
0
100
200
300
400
500
3 6 9 12 15 18 21 24 27 30 33 36 39 42

Figure 2



Adverse effect of ordinary prepared shellac is illustrated in the above photos. Figure 3 (left) contains ordinary liquid shellac. Figure 4 (right) contains special shellac.

for both shellac and nitrocellulose was about 6.5 to 1. With lower ratios of nitrocellulose to shellac, incompatibility exists, but there is sufficient shellac to form a continuous non-homogeneous film (Figures 7 and 8). Actually the nitrocellulose is more sensitive to precipitation by the presence of shellac than shellac is to the influence of non-solvents. It can be shown, however, that lacquer solutions can tolerate 2.5 times the weight of the nitrocellulose if the processed shellac is used.

The illustrations, Figures 9 and 10, are two photomicrographs of nitrocellulose films containing the special white dewaxed shellac and ordinary liquid white dewaxed shellac. The composition of these lacquers is similar to "B" in Table I, which contains 20% tricresyl phosphate as a plasticizer. When these films were cast, the casual observer would see very little difference either in their transparency or their general appearance, particularly if they were placed on an opaque base. Critical examination of these films indicated that there was a definite incompatibility of ordinary liquid white dewaxed shellac, whereas with the processed shellac no incompatibility was evident. By suitable lighting techniques and high magnification, it was possible to show the network of ordinary white dewaxed shellac precipitated in the nitrocellulose film.

Test Lacquers

A LARGE number of lacquer formulations containing the processed materials were investigated, and compared with 3 common metal lacquers. Experiments indicated that the optimum ratio of nitrocellulose to shellac solids to give good properties was in the proportion of 1.5 to 1 and that considerable amounts of plasticizer or plasticizing resins were required, but no more than the amounts employed with other resins.

Table I gives the composition of two lacquers, A and B, containing the special shellac and compares them with three lacquer formulations, C, D, & E, containing resins other than shellac. It can be seen that A is outstanding, particularly in its hardness, elongation and flexibility. Furthermore, its overall adhesion to metal is very good, especially to steel.

Table I gives the composition of the lacquers which are the subject of this paper. The quantities of the ingredients given represent the composition of the lacquers after dilution to a spraying viscosity which was selected as being 100 centipoises. The solid constituents were dissolved in somewhat less than the indicated amount of solvent by slow speed agitation, and they were later adjusted to spraying viscosity by diluting with mixed solvent.

The panels used were made of 24 guage (.025" thick) cold rolled steel, brass, aluminum and tin plate. The raw stock was washed in hot soap and water, rinsed, dried and subsequently degreased with toluene and dried. The test lacquers were applied in two coats, each was allowed to dry for 24 hours at 72 F, and the panels were given a final force dry of one hour at 158 F.

Tests

Sward Hardness—By this test, the hardness of a film is expressed directly in terms of the percentage of the hardness of plate glass, by means of the Sward Rocker Hardness testing instrument.

Sanding—The panels prepared as described previously were given twenty double rubs with new, dry, No. 320 carborundum finishing paper. The sanding properties were tabulated as follows:

A. Excellent—the finish was sanded readily and no clogging of the paper or rolling of the finish was encountered.
B. Good—the finish sanded readily and only slight clogging of the paper was noted.
C. Fair—the finish was quite difficult to sand, considerable clogging of the paper was noted and some rolling of the loose sanded material was in evidence.
D. Poor—finish could not be sanded.

Elongation and Flexibility—The conical mandrel test developed by the Bell Telephone Laboratories for extensibility of films attached to metal panels was used to obtain, first, the flexibility of the various lacquer

Another case of the effect of ordinary shellac lacquer films is shown above. Figure 5 (left) contains the ordinary liquid shellac. Figure 6 (right) contains special shellac.

films and, second, the approximate elongation of these films.

Brass panels 6″ × 3″ × .025″ in dimensions were used. Each metal panel was prepared for coating as described previously and two coats of the lacquer composition were applied by spraying, and dried in the usual manner.

If a film withstood a bend over the small end (⅛″ d) of the mandrel without cracking, the degree of elongation was at least 30%. On the other hand, if a film cracked when its panel was bent over the large end (1½″ d) of the mandrel, its elongation was less than 3%. The elongation rating of a film cracking to some part in between these limiting values (3 and 30%) could be determined by checking the extent of the crack along the axis of the mandrel, and referring the value obtained to a calibrated chart supplied with the instrument.

Since many films which cracked from end to end in this mandrel test were, nevertheless, flexible, the test was supplemented in the manner described below so as to obtain a flexibility rating for each lacquer film tested. A fragment of each film showing less than 3% elongation on the mandrel was bent sharply upon itself between thumb and forefinger. If the film snapped before it had been bent sharply upon itself, it was rated as brittle. A film was rated as flexible if it withstood this bend-double test. Any film having an extensibility greater than 3% was rated as very flexible.

Sensitivity to Water and Salt Solution—The steel panels coated with the test lacquers previously described were used for this test. One drop each of distilled water and of a 5% solution of sodium chloride was applied to the coated panels with a dropper and confined in place with an inverted watch glass. After twenty-four hours at 72 F, the watch glasses were removed, the test drops were washed off with water and the panels were dried. The films were then inspected for any effect caused by the test liquids. A second inspection was made 24 hours later.

Adhesions—A series of ten parallel cuts, one tenth of an inch apart and approximately one inch long, was cut down to the panels with a razor blade. A similar set of cuts was made at right angles to and superimposed on the first set, forming small cut squares.

If in this cross-hatching the squares snapped from the panel, poor adhesion was indicated. However, if this condition did not occur, an attempt to lift the cut squares from the panels with a sharp instrument such as the point of a pen knife, was made and the degree of difficulty noted and recorded as follows: If they could be loosened with little difficulty, fair adhesion was indicated. If it were quite difficult to lift the squares, good adhesion was indicated. If no tendency for the squares to leave the panels showed up, the adhesion was considered excellent.

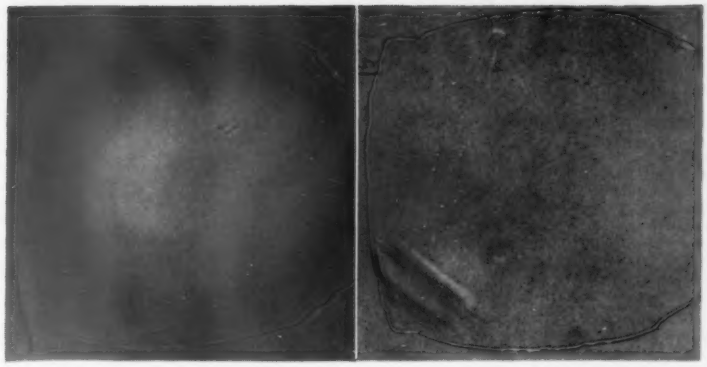
Each metal panel to which the lacquer film adhered in this flat position with a rating of excellent was then bent round a three inch mandrel and reexamined as before. If the films still adhered to the panel upon examination, it was then bent round a ⅜ inch mandrel and again reexamined.

The adhesion values of the various lacquer compositions are rated according to a system of letters and numerals. If a lacquer showed any failure in adhering to a panel in the flat position, it was classified with the letter C. Should the lacquer pass this test, but show any failure when bent around the three inch mandrel, it was classified with the letter B, and if the film passed this test it was classified with the letter A, representing the ⅜ inch mandrel test.

The numerals used in the rating system indicate the following standard descriptions in each category:

1. Excellent
2. Good
3. Fair
4. Poor

From this system of classification, it can be seen readily that a lacquer evaluated and classified as A-1, is superior in adhesion on that particular metal and one given the classification of C-4 would have exceedingly poor adhesion on that metal.



Above lacquer films contain lower ratio of shellac to nitrocellulose. Figure 7 (left) contains ordinary shellac; figure 8 (right) contains special shellac. Figure 7 shows a continuous, non-homogeneous film. Close examination of figure 7 reveals "silking".

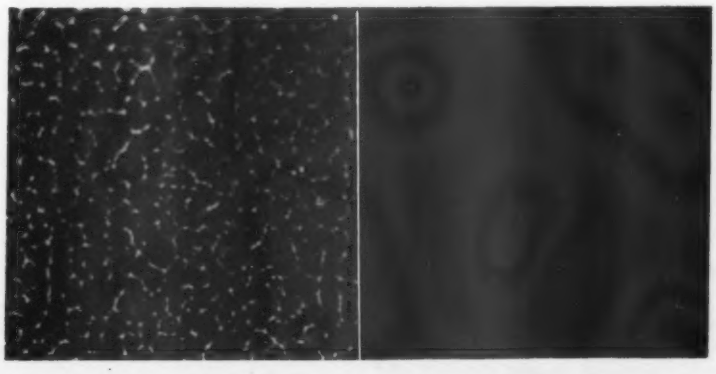


Figure 9 (left) and 10 (right) are photomicrographs of nitrocellulose films containing ordinary and special shellac respectively. Critical examination of Figure 9 indicates that there is a definite incompatibility with ordinary white shellac.

COMPARISON OF METAL LACQUERS

COMPOSITION	SAMPLE NUMBERS A	B	C	D	E
Solids:					
1/2 Sec. RS Nitrocellulose (Dry Weight)	100	100	100	100	100
"Zinflex" Lacquer Mixing Shellac (Dry Weight)	67	67	—	—	—
Resin A (Dry Weight)	—	—	50	40	—
Resin B (Dry Weight)	—	—	—	—	100
Resin C (Dry Weight)	—	—	—	—	25
Tricresyl Phosphate	30	20	—	—	—
Dibutyl Phthalate	—	—	—	—	25
Solvent: Parts by weight					
Ethyl Acetate	—	—	79	74	69
Butyl Acetate	247	246	275	257	153
Proprietary Denatured Alcohol	—	—	—	—	40
Ethyl Alcohol (Added with Nitrocellulose and / or shellac)	99	99	43	43	43
Butyl Alcohol	106	105	118	110	82
Toluene	353	351	315	294	295
Toluene (Added with Resin)	—	—	33	27	100
PROPERTIES:					
Sanding	A	A	A	A	C
Hardness (Sward - % of Plate Glass)	38	44	56	50	16
Elongation (Conical Mandrel)	> 30	3.6	< 3	3.2	30
Flexibility	V. FL.	V.FL.	FL.	V.FL	V.FL
Sensitivity to Distilled Water	OK	V.Sl.Blisters OK		OK	OK
Sensitivity to 5% NaCl Solution	OK	OK	OK	OK	OK
Adhesion:					
Tin Plate	B-4	B-4	C-4	C-4	B-3
Steel	A-3	A-3	C-4	C-3	B-2
Aluminum	B-3	C-2	C-4	C-4	B-2
Brass	A-4	A-4	B-1	B-1	B-1
% Solids @ 100 cp. Viscosity	19.7	18.9	14.8	14.8	24.2

Table I

Dilution Tests

ONE property of shellac which has limited its use as a lacquer fortifying resin has been its poor tolerance for the common hydrocarbon solvents used as diluents in lacquer formulations. Tests were conducted by diluting 4 lb. cuts of the shellac with various quantities of the diluents and measuring the fraction of incident light transmitted by a quantity of the diluted solution. These tests were conducted to determine the dilution ratios of both types of shellac with toluene and Solvesso #100. Curves were drawn from the data so obtained and are shown in Figures 1 and 2.

It will be noted that the processed shellac will tolerate about 50% more of each of the two diluents than will ordinary dewaxed white shellac before precipitation occurs.

The detailed procedure for conducting these tests is as follows: Materials required: 1. Dewaxed white shellac—reduced to 4 lb., 2. "Zinflex" Lacquer Mixing Shellac—reduced to 4 lb., 3. Commercial toluene, 4. Solvesso #100, 5. Proprietary denatured alcohol.

Apparatus required: 1. 10 ml pipette, 2. Burette (50 ml), 3. Klett-Summerson colorimeter fitted with a #54 filter, 4. Colorimeter tubes.

The tests were conducted by adding to small (50 ml) flasks 10 ml of the shellac solution reduced to a 4 lb. cut; 5 ml of the diluent were then added and the mixture was thoroughly stirred. After deaerating, the proper quantity was poured into a colorimeter tube and the opacity was determined from the scale on the colorimeter. Subsequent reading was made similarly using 5 ml increments of the diluent until the opacity readings which had been successively decreasing, suddenly increased. Readings were then taken using 1 ml increments between the last two 5 ml increment dilutions to determine the exact point of dilution at which precipitation started.

The results were plotted on rectangular coordinate paper using the opacity readings as the abscissa and the volume of diluent added as the ordinate.

Arthur L. Mullaly Memorial Established at Newark Eng.

Assurance of New Jersey's continued dominance in the paint and varnish industry was given by Professor Frederick W. Bauder of Newark College of Engineering on May 4, 1951 to two hundred paint chemists, technologists and production specialists participating in a "Color Forum" held in the College's Weston Hall. Prof. Bauder, chairman for the meeting, announced the establishment of the Arthur L. Mullaly Memorial Coatings Laboratory for the furtherance of research and production in this field.

The Laboratory, which is to be set up at N. C. E. by Mrs. Mary B. Mullaly as a memorial to her late husband, will serve the protective coating industry in the dual capacity of research and instruction, according to Prof. Bauder. The research will be in the form of sponsored projects in cooperation with local manufacturers, as well as independent efforts by research fellows. In the field of instruction, the memorial laboratory will engage in advanced techniques at graduate level, and also under the Special Courses Division program for the upgrading of technicians and assistants, he said.

Arthur B. Mullaly was president and founder of the Advance Solvents and Chemical Corp., a pioneer in the field of coatings chemistry including the polyvinyl resins, wax coatings and adhesives. He was a member of the New York Paint, Varnish and Lacquer Association, the Belleville Lodge of F & A M, past president of the Deal Fishing Club and the Deal Property Owners Association, in addition to many professional societies.

●

Dr. Wheeler to Deliver 1951 Mattiello Memorial Lecture

The Federation of Paint and Varnish Production Clubs has announced that Dr. Donald H. Wheeler of the Chemical Division of General Mills has been selected by the Mattiello Lecture Committee to present the Joseph J. Mattiello Memorial Lecture at 1951 meeting of the Federation in Atlantic City. His subject will be "Thermal Polymerization of Esters of Unsaturated Fatty Acids".

Dr. Wheeler is the author or coauthor of about 30 papers, mostly in the field of fatty acids, particularly on their thermal polymerization, oxidation and chemical reactions. In a poll conducted by the Chemical Bulletin of the Chicago A. C. S. Section in 1947, he was selected as one of the ten ablest chemists or chemical engineers working in the United States in the field of fats, oils and soaps.

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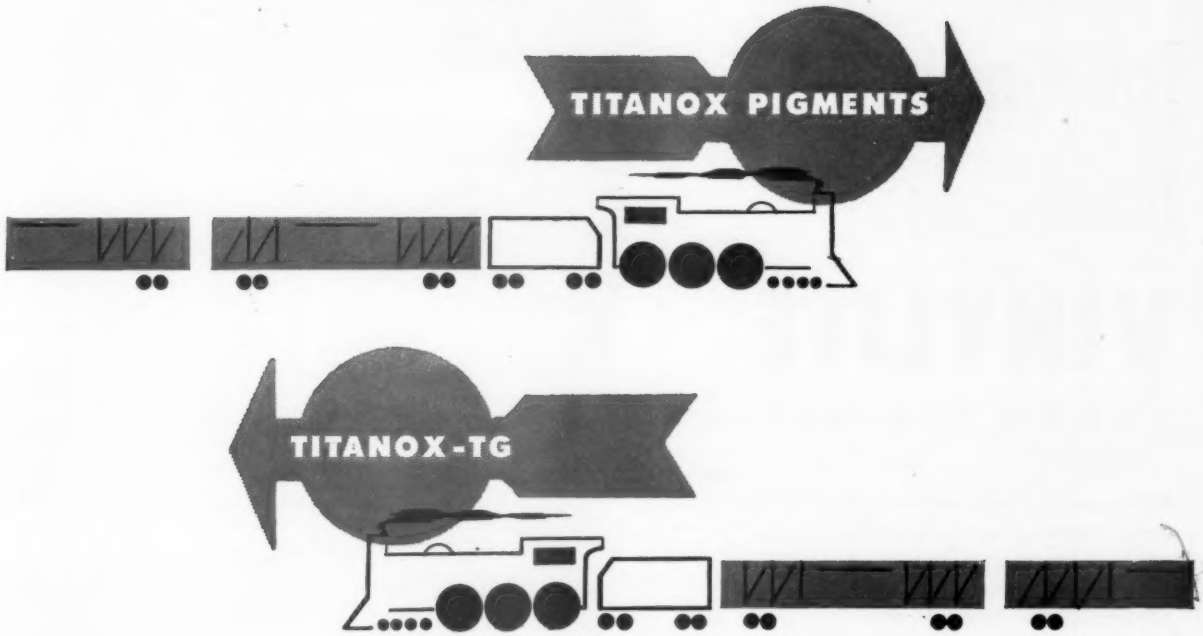

In recent years, several TITANOX pigments have been increasingly in demand as the best source of titanium dioxide for improving vitreous enamels, welding rod coatings, carbide tools and ceramic dielectrics. In these uses, the carefully developed characteristics of TITANOX pigments were unimportant—even posed problems.

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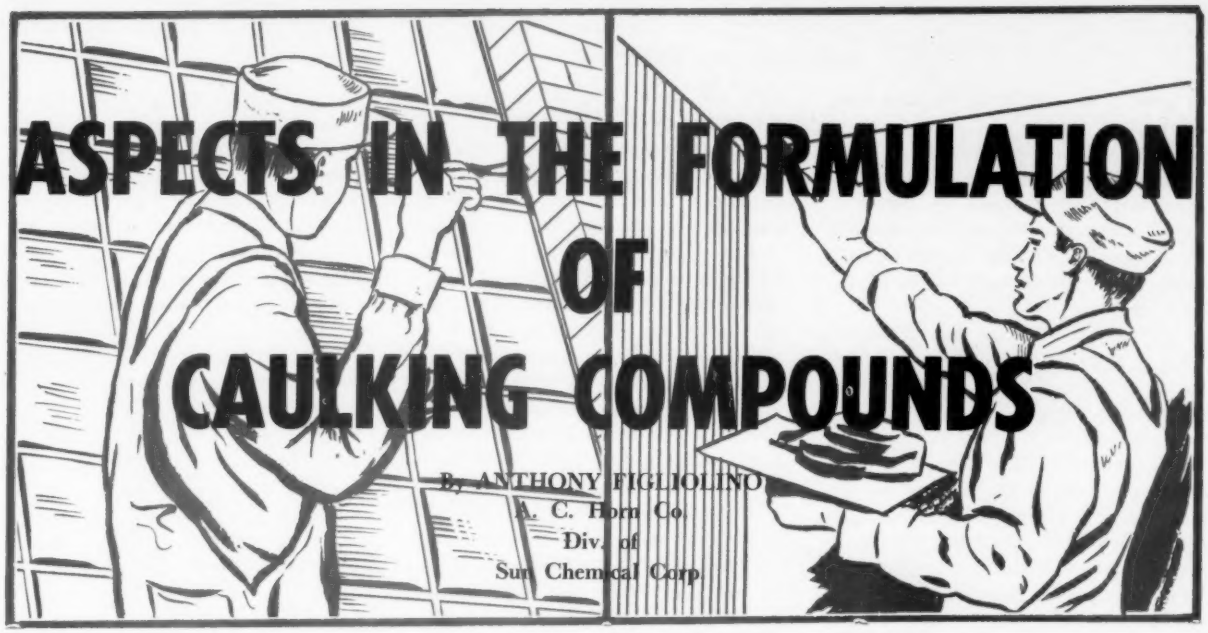


ASPECTS IN THE FORMULATION OF CAULKING COMPOUNDS

By ANTHONY FIGLIOLINO
A. C. Horn Co.
Div. of
Sun Chemical Corp.

CAULKING compounds are used wherever it is desired to obtain a tight and sound water resistant joint between masonry and window frames, stone copings, steel sash, masonry construction, glass brick and wooden frame construction. It helps to protect interior surfaces from damage by preventing moisture to enter the exterior. Likewise, building exteriors are kept in good condition by preventing water from entering between joints and backing up at a later date. This invariably results in the peeling and flaking of exterior paints. Drafts are eliminated thus helping to maintain an even temperature in buildings. A caulking compound must have many properties in order to have excellent durability.

Non-Shrinkage & Non-Cracking

EXCESSIVE volatile matter and penetration of the binder into the building surface will cause the caulking material to shrink considerably. It may go so far as to cause cracking of the product. This would allow moisture and air to enter, thereby defeating the purpose of the caulking compound. Too much shrinkage may be prevented by eliminating the volatile matter or by employing a non-penetrating vehicle with or without the use of volatiles. Best results are obtained by eliminating most of the solvent. A small percentage aids in the application of the product, although most satisfactory compounds are produced without any volatile matter.

Unbodied oils will also aid shrinkage and cracking to a large extent due to their pronounced penetrating qualities. Therefore, a caulking compound having no solvent matter may also shrink due to excessive penetration of the oil. This may be prevented by utilizing treated oils, which are either heat polymerized or chemically treated. Such oils are treated with air, lime, and sulfur chloride. Another type involves treating the fatty acids of oils with pentaerythritol.

One important feature is the proper pigment vehicle ratio to prevent shrinkage and cracking. Sufficient pigment will offset somewhat the poor features of the vehicle if any, and also enhance the properties of a good vehicle by absorbing part of the vehicle. Use of fibre pigments will tend to prevent cracking by holding the product together with a maze of interlacing structure.

Volatilization of solvent and penetration leaves the caulking compound with something to be desired. Stresses are set up within the product, and when they overcome the cohesive strength of the material, cracking occurs.

Some contractors use primers to offset any possibility of cracking and shrinking. The primer must be a quick-drying type, and usually a lacquer or a rubber type vehicle is used. This step will fill the pores of the surface and prevent the caulking compound from penetrating.

It takes a combination of all the foregoing qualities; minimum quantity of volatile matter, if needed, an oil having at least some non-penetrating qualities, and the proper pigments and pigment-vehicle ratio, to manufacture a product having shrinkage within a safe range, and no cracking whatsoever.

Elasticity

THE definition of elasticity is the quality of a material to be able to return to its normal form from which it is extended. While this may not entirely apply to a caulking compound, it is true in essence. A caulking compound will not return to its original form automatically, but if some pressure is applied after it has been extended, it should be able to return quite nearly to its original shape. After the material is applied to a building surface, it should remain soft and pliable underneath the skin (due to oxidation of its surface). A hard non-elastic inner mass is likely to cause some trouble due to the loss of bond of the compound to the building. Such a mass may also crack. This would allow seepage of water into the building, thus causing damage. A soft pliable mass will give and take depending on the contraction or expansion of the building and the material, caused by temperature changes and vibration of the building. In order to obtain an elastic product, a binder must be used that is resistant to the deleterious effects of the weather. Oxidation must be kept at a minimum.

Semi-drying oils such as soybean and some fish oils are employed to good advantage. Other oils used are

rapeseed oil, ricebran oil and sunflower oil.

Here again pigment-vehicle ratio is important. Excessive pigment and the improper balance of pigments will cause the caulking compound to lose some of its ability to comply with the above mentioned elasticity requirements.

A proper oil must be employed, but if the pigment ratio is too high the product will lose the beneficial effects of the oil. Too much oil will be absorbed by the pigment resulting in a dry mass, and thus the lubricating action of the oil will be destroyed. Its ability to hold the pigment together decreases until an elastic product does not exist anymore. Improper balance of pigments will have an injurious effect on the material.

A mixture of fine, medium and course fibre pigments give best results. They interlace, thus forming a product which has cohesive strength and which has the ability to withstand vibration and temperature changes. The long coarse and medium fibres hold the mass together, whereas the fine fibre pigment fills in the voids. This action aids the coarser pigments in fulfilling their duty by giving them support from within.

Non-Slump

A PRODUCT that will not remain in place causes grief to the manufacturer, the contractor and the owner of the building where it is applied. It leaves a sloppy mass that not only mars the appearance of the building but also fails in performing its primary function of protection. The ability of a caulking compound to resist flow after application, especially at elevated temperatures, depends on a combination of proper pigment balance, pigment-vehicle ratio, and nature of oil used in the formulation. The presence of long fibre pigments will aid materially in preventing the product from slumping due to its ability to intertwine itself with other pigments. An oil that doesn't possess too much flow, "shortness," will have non-sagging qualities.

Oil Retention

JUST as a slumping product will mar the beauty of a building, so will the ugly side spreading of oil from the compound to the surface. A slumping material may be removed, but what to do about staining presents a difficult problem. The bleaching action of the sun will in time tend to alleviate the condition, and sometimes it disappears entirely. The best method naturally is to employ a caulking compound that does not stain. Excellent oil retention is obtained by the incorporation of the bodied oil, and oils having a gel-like structure. High oil absorption pigments also aid in preventing staining, but they must be used judiciously. An excess will result in a dry product.

The composition of caulking compounds varies considerably depending on the desired consistency, and where and how it is to be used. Two grades are usually employed; namely gun grade and knife grade. An "in between" consistency is occasionally manufactured. This material is applied with a pressure gun. For long life, the products should remain permanently soft, have a "live" and resilient quality, and retain their adhesion to all surfaces.

Oils

THE oils employed in caulking compounds have a pronounced effect on their durability and, as is natural, manufacturers do not agree as to the type of oil to use. Some of them believe that a certain viscosity oil is beneficial to their product while others use a chemically treated oil in their formulations. Below is a list of the more important types used accompanied by a brief description of how they are prepared.

Heat Bodied Oils—One of the most important treatment of oils involves bodying at high temperatures. The kettle used may either be the open type or a closed type kettle equipped with a mechanical stirrer. For light colored oils inert gases such as carbon dioxide and nitrogen are employed. The gases are bubbled through the oil thus displacing the air in the kettle. Heat is furnished by oil, coke, gas or electricity. Temperatures of 560 degrees F to slightly above 600 degrees F are sufficient to polymerize the oil.

Blown Oils—Chemical treatment of oils by oxidation is an old process, and was first used in connection with drying oils. The purpose was to improve the film properties and shorten the drying time. But for our purpose the principal reason for adopting this method is to obtain heavy viscosity oils having superior wetting properties. Due to the increased wetting qualities of a blown oil, special care must be exercised in the formulation of caulking compounds so as to prevent sagging of the product. Another serious detriment of some blown oils is the possibility of "livering" on ageing when compounded.

Sulfur and Sulfur Chloride Treated Oils—Sulfur treated oils or vulcanized oils have excellent exterior durability and elasticity. The sulfur chloride reacts with the oil in the cold. As the reaction becomes rather violent and is exothermic in nature, care must be exercised in its manufacture. The sulfur chloride is added slowly in portions, with constant stirring of the batch, allowing sufficient time for the reaction to subside before adding the next portion. The mass is allowed to agitate for approximately one hour after the final addition of sulfur chloride. In this manner, sufficient time is allowed for the reaction to attain completion, and also to permit as much of the hydrochloric acid formed to volatilize as is possible.

The sulfur first reacts by addition, and the sulfurized molecules condense with either more sulfur or with sulfur from a neighboring molecule to produce highly polymerized products. In fact, a rubber-like mass can easily be obtained, but for use in caulking compounds a highly polymerized product is not satisfactory.

The action of elemental sulfur on fatty oils is much slower than that of its chloride. The mixture requires heating before any combination takes place. The use of elemental sulfur avoids accidents which sometimes take place due to the violent action of sulfur chloride. Combining occurs between 300 to 400 degrees F, resulting in a dark brown to black viscous bodies. The action of sulfur is probably the same as that of the chloride in that the double bonds of the oil become saturated.

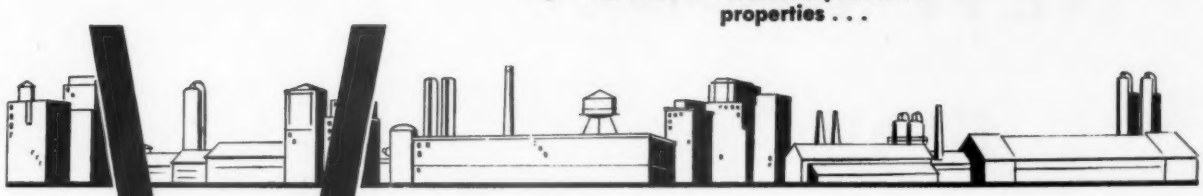
Since the bonds are satisfied, the oil will not absorb oxygen and hence will not be subjected to the deteriorating action of oxygen as the film ages. This of course, depends on

(*Turn to page 28*)

1 EXTEND limited supplies of resins . . .

2 REDUCE raw material costs . . .

3 RETAIN desirable protective properties . . .



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AD · 21

FORMULATION	25% REPLACEMENT	70% REPLACEMENT
Velsicol AD-21	25 Lbs.	70 Lbs.
100% Oil Soluble Phenolic	75 Lbs.	30 Lbs.
Chinawood Oil	280 Lbs.	100 Lbs.
Soybean Oil S-70	———	100 Lbs.
Mineral Spirits	380 Lbs.	300 Lbs.
Driers	0.5% Lead, 0.03% Cobalt, 0.03% Manganese	0.5% Lead, 0.03% Cobalt, 0.03% Manganese
VEHICLE PROPERTIES:		
Gallon Length	35	25
Solids	50%	50%
Viscosity (Gardner-Holdt)	G+	G
Color (Gardner)	12-13	12-13
Set-To-Touch	15 Min.	30 Min.
Tack Free	2 Hours	6 Hours
Print Free	3 Hours	8 Hours
Dry Hard	5 Hours	18 Hours
Kauri Reduction	Passes 170% Fails 180%	Passes 80% Fails 90%
GAS PROOF TEST	Passes	Passes
WEATHEROMETER TEST	247 Hours	228 Hours
RESISTANCE TESTS:		
H_2O @ 77° F.	72 Hours—Film O.K.	72 Hours—Film O.K.
H_2O @ 212° F.	6 Hours—Film O.K.	5 Hours—Film O.K.

One of the most promising applications of Velsicol AD 21 is its use as an extender for 100% oil soluble phenolic resins. This type of application is capable of providing considerable saving in raw material costs with resulting retention of desirable performance properties.

Data at the left represents two typical applications in which Velsicol AD 21 can be used as partial replacement of 100% oil soluble phenolic resins.

For additional data and information, request Technical Bulletin No. 219.

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NEW MODERN PLANT FOR GENERAL PAINT COMPANY

Roller mills in the right foreground are gravity fed from paste mixers above. Then the material is moved by dolly across the aisle in center to a row of mixers.

EFFECTIVE positioning of equipment, maximum use of piping for liquids, and arrangements for minimum interdepartmental hauling of bulk materials, are the features to be noted in General Paint Company's new million dollar paint and lacquer plant in Los Angeles.

Installation of all vital equipment was assigned to machinery setting specialists from *MacIsaac, Menke & Roach, Inc.,* General Contractors of Los Angeles, operating in conjunction with *John M. and Thomas R. Cooper,* Architects and Engineers.

The 86,000 square foot plant consists of a modern office building of Type 1 construction, and factory, warehouse, maintenance building and pump house of Type A. A 2000 square foot nitrocellulose storage building is 3-A construction.

Ample interior storage for gums, oils, dry pigments, as well as cans and cartons, is provided between spacious covered loading docks and the production areas. Delivery of raw material from this storage room is made through a fire door onto the mezzanine floor ten feet above the main concrete slab flooring the plant. A fork lift truck is used to handle the material at this point.

First in line to receive the dry mixes and pastes on the deck level from the storage floor below are four Patterson pebble mills of varying capacities. Three of these are blending paints, lacquers and synthetics, and the fourth is turning out L & S House Paint, one of General's leaders. The first two are powered by 7½ HP U. S. motors, the third by a 20, and the fourth and largest by a 30 HP motor. Fenced structural steel loading platforms are provided over each mill for the safety and convenience of the operator.

Tank agitators, foreground, receive basic lacquer compounds from ball mills.

Two Patterson ball mills, one a 150 gal. driven by a 7½ HP motor and the other a 350 gallon with a 15 HP motor, are also in this section of the mezzanine and are assigned to the mixing of basic lacquer compounds. Then these mixes are pumped to a nearby island of nine Thompson Rose tank agitators for thinning and tinting. These tanks are from American Pipe and Steel, four being of 1100 gallons of capacity and powered with 7½ HP motors. The remaining tanks in the grouping are of 600 gallon capacity driven by 5 HP motors of the same make. A steel catwalk is mounted between the two rows of tanks at a height of 5′ above the

From two ball mills shown, lacquer mixes are pumped to agitators for thinning and tinting.

floor slab, giving easy access to the feed line controls and motor mountings.

Further along the perimeter of the mezzanine is a fifth pebble mill producing primers and turned by a 2 HP motor. Adjacent to this are two 120 gallon Patterson ball mills grinding house enamels and synthetic lacquers, and a 50 gallon 7½ HP Champion mixer for paste fillers.

Across the deck from these mills is a row of eight new S. C. Carter Co. paste mixers of 100 gal. operating capacity and each powered by a 5 HP U. S. motor. These mills are turning out house enamels, flats and synthetics, which from there drop to three 25 HP Day roller mills, two large three roll mills, one small three roll mill, and a high speed Morehouse portable model B-1400 located on the main slab beneath the paste mixers. A new Patterson 6 × 8 ball mill is currently being added to this line.

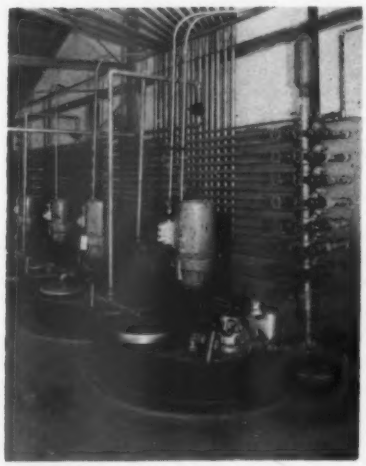
A supply center for the dispensing of oils, thinners, varnishes, resins, etc., is located in a nearby convenient corner of the mezzanine. This area is fed by ten small supply tanks which are mounted within the area itself, as well as by a series of larger tanks located immediately adjacent to the area but exterior to the building. A series of 5 HP pumps delivers material from these storage tanks to the supply center. Three pony mixers are also working in the center.

A pressure type pumping system is used throughout the plant. Fluids pumped from storage vessels are maintained under pressure at all times in the lines and can be drawn off at any of the right draw-off stations by the opening of a valve.

From the roller mills the material is delivered by dolly across a narrow aisle to a row of nine agitators of the post mixer type, with an operating capacity of 150 gallons, and each powered by a 3 HP motor. Oils, thinners and tints are added at this point to make the finished product.

The far end of the mezzanine is enclosed by a partition marking the beginning of the lacquer section. In this room fluid resins and solvents are piped via visible register motors to a battery of nine mixing tanks located on the lacquer room deck for the production of industrial and automotive enamels and lacquers. The tanks are American Pipe and Steel products, two of which are 500 gallon capacity powered by a 5 HP motor. Three are 250 gallon tanks with 3 HP motors, and three are 800 gallon tanks with 7½ HP motors in this assembly. From here the product is drawn off by gravity and delivered across the room to a row of eight S. C. Carter agitators where the color is added.

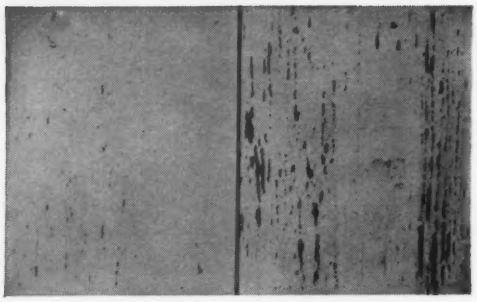
1000 square feet of covered area in the same building is devoted to a thoroughly equipped and adequate label printing plant plus the labeling department which is closely combined with storage space for stocks of finished products waiting shipment.



Lacquer mixing tanks are fed fluid resins and solvents through piping via visible register meters. Dry materials are delivered to these tanks from mezzanine floor at right of tanks.

Dry materials enter the plant from storage through the fire door shown at far end of mezzanine. Pebble mills on left and past mixers on the right are in line to process this flow.

"lead" keeps paint looking better— *LONGER*



30 MONTHS EXPOSURE TEST IN FLORIDA
Note better appearance of paint at the left, properly stabilized with white lead, as compared with that of the lead-free paint at right.

The first day that house paint is applied, it begins a constant battle with the elements. Heat and cold, wind and dust, chemical action — all combine forces under the general term "weathering". Whether or not your paint contains white lead determines to great degree if it will be subject to checking, cracking and eroding. The presence of neutralizing basic lead salts minimizes the effect of attack by the acidic degradation products formed during the weathering process.

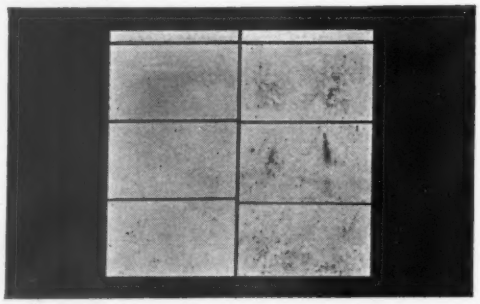
With weathering held in check, dirt-collecting cracks and eroded valleys are minimized. With paint containing white lead, a continuous smooth surface is maintained through slow, even chalking — paint retains "fresh" appearance — longer.

White lead stabilizes ready-mixed house paints against breakdown by checking, cracking and severe erosion. This is but one of several reasons why white lead is so desirable in house paint. Use enough of it to take advantage of all the qualities that white lead pigments impart. You as the manufacturer will know you are producing a better — more reliable product. And lead pigment in paint can't be beat as a valid argument to promote sales.

Valuable Reference Material: Write for data sheets on paint formulations to meet specific end requirements. *Lead Industries Association, 420 Lexington Avenue, New York 17, N. Y.*

resists mildew

The addition of white lead in carefully balanced, mixed pigment house paints improve their resistance to mildew. Lead and other metal soaps are formed in just the right proportions not only to plasticize the film for maximum toughness and elasticity but also to give greater fungicidal properties.



Note improved mildew resistance of paint at the left, properly stabilized with white lead, as compared with that of the lead-free paint at right.

7682

"LEAD" LENGTHENS THE LIFE OF PAINT BECAUSE:

It Stabilizes—neutralizes acidic compounds resulting from the decomposition of the vehicle—prevents the film from becoming soft or liquefying.

It Plasticizes—forms lead soaps which increase film flexibility.

It Strengthens—flexible, spiney crystals in lead soaps mechanically reinforce the film and increase elastic strength.

It Resists Water — paint films with an optimum lead pigment content absorb only a small fraction as much water as they otherwise would.

It Limits Oil Penetration — more of the vehicle remains in the film where it is needed; less is absorbed in the substrata.

It Improves Appearance—by controlling chalking and inhibiting mildew.

Information * Please?

GROCO 24
Regular Coconut Fatty Acids

Titre	22° —	25° C.
Color 5¼" Lovibond Red	1 —	3
Color 5¼" Lovibond Yellow	8 —	12
Color—Gardner 1933	2 —	4
Unsaponifiable	0.25% —	0.50%
Saponification Value	261 —	270
Acid Value	260 —	269
Iodine Value (WIJS)	6 —	12

A. GROSS & Company

MANUFACTURERS SINCE 1837

295 MADISON AVENUE • NEW YORK 17, N. Y.
Factory: Newark, N. J.

THE IMPORTANT ROLE OF GENERAL SERVICE ADMINISTRATION

THERE are few elements of expenditure in the national budget which equal those for supply. As a matter of fact, the functions of purchasing, transportation, distribution and property management represent the second largest item of expense in the budget. It is exceeded only by the amount authoriezd for personal services. In the fiscal year 1948, Federal expenditures for supplies, material and equipment closely approached an estimated nine billion dollars.

Responsibilities

WHEN the General Services Administration was created in July 1949, it undertook one of the most challanging roles in Government—centralized responsibility for all phases of Federal supply activities. This includes not only the purchasing of supplies and equipment, but also the responsibilty for their maximum use, the care and handling of surplus properties, and the disposal of such surplus when that is to the Government's best advantage.

The supply objective is to provide systematic and unified direction of the many tasks involved in supply management. More pointedly, it is to realize as many economies as possible in directing the supply machinery; to assure that Government business is fairly spread among all suppliers, and that the taxpayer's dollar is protected to the utmost.

The General Services Administration has a prime responsibility in creating a universal language of supply—a commodity identification and classification system which will enable the Government to know at all times what it owns, how much there is of it, where it is located and in what condition it is. The fruits of such a system would be more accurate property management, less new purchasing and greater utilization of existing equipment.

In the field of property utilization, the GSA will bring into reality, a Government-wide program on the maximum utilization of existing facilities. The GSA will supply the means which will enable the transfer, within economical geographic zones of the country, of facilities not needed by one agency but required by another. An item of property owned by an agency should be realized to be an item of property available for use throughout the Government, if the specific task for which it was purchased has been satisfied.

Another important adjunct to supply management and planning is the subject of traffic. It has been authoritatively estimated that the annual expenditure by the Government for transportation exceeds one billion dollars. The intricacies of traffic management are usually beyond the average agency purchasing office, yet such traffic functions as computation of rates, determination of the best shipping routes, packing and packaging information must be provided. In addition, the agencies must have a central service which can act in their behalf as a customer before the various regulatory Commissions.

The Federal Supply Service of GSA does the procurement contracting for the Government agencies when:

a. Price agreements can be made for a period of time in which the contractor agrees to furnish material at a specific price within a specific period. An example of this type of purchasing would be electrical power.

b. Consolidated buying for storage and reissue to government agencies which will result in savings and quicker services. Examples are paper and paint.

c. Consolidated definite quantity contracts for direct delivery to the ordering agencies that can be made from the individual orders of each agency. Again paint procurement could serve as an example for this type of contract.

When the three methods above do not govern the purchase, the individual agencies may buy direct so long as appropriate specifications or procurement descriptions are prepared.

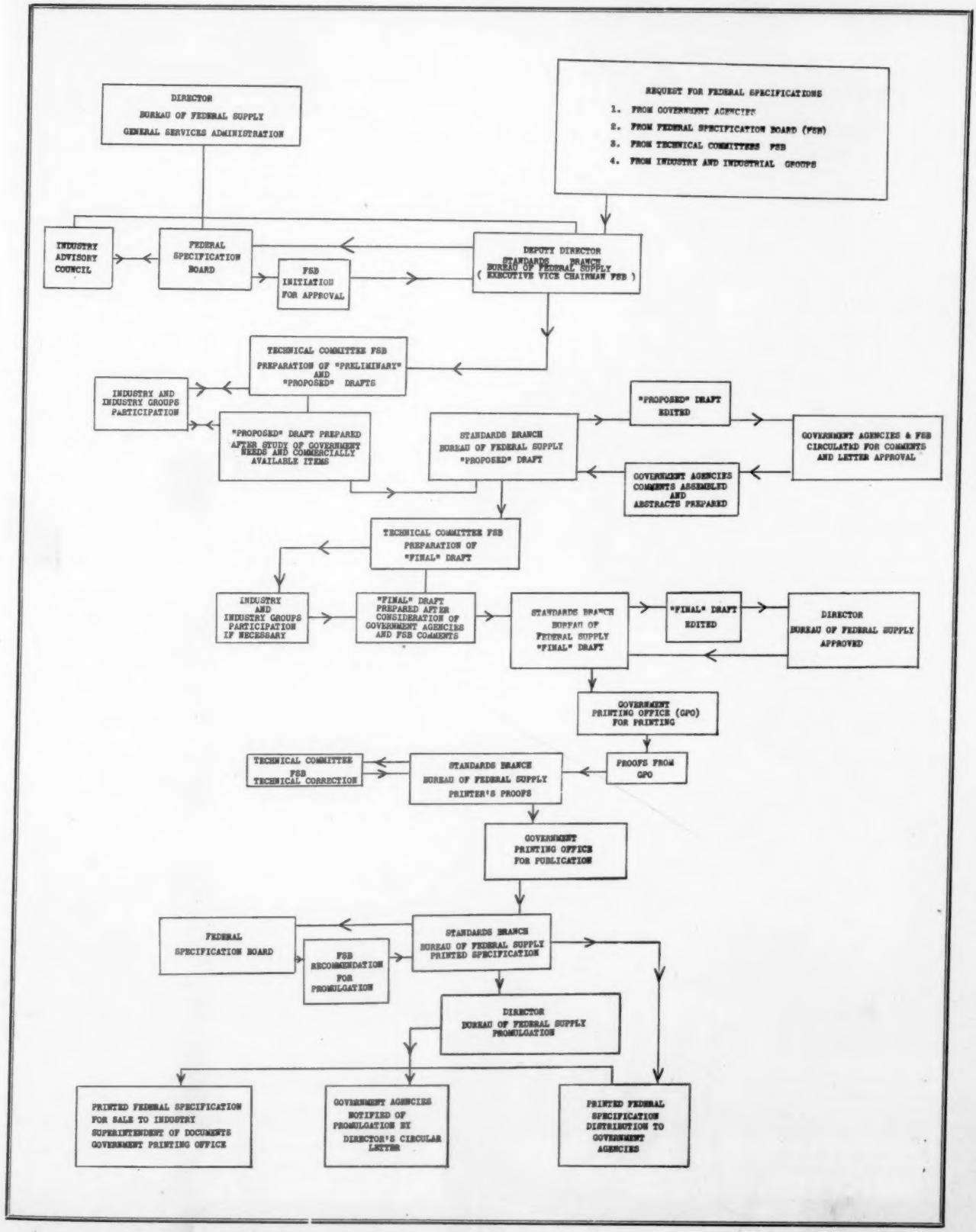
Federal Specifications

THE Federal Supply Service of GSA is responsible for establishing the standards for quality. This is carried out by the Federal Specification Board which is charged with the preparation and revision of purchase specifications for supplies used by executive departments and establishments. The Board is composed of representatives of Treasury, Army, Navy, Air, Post Office, Interior, Agriculture, Commerce, Veterans Administration, Federal Security Agency, and Federal Works Agency.

Actual drafting of Federal Specifications is performed by 70 odd specialized Technical Committees with a combined membership of over 1300 technical experts drawn from throughout the Federal Government.

(*Turn to page 35*)

PROCEDURE FOR PREPARATION OF FEDERAL SPECIFICATIONS


DIRECTOR
BUREAU OF FEDERAL SUPPLY
GENERAL SERVICES ADMINISTRATION
REQUEST FOR FEDERAL SPECIFICATIONS
1. FROM GOVERNMENT AGENCIES
2. FROM FEDERAL SPECIFICATION BOARD (FSB)
3. FROM TECHNICAL COMMITTEES FSB
4. FROM INDUSTRY AND INDUSTRIAL GROUPS
INDUSTRY ADVISORY COUNCIL
FEDERAL SPECIFICATION BOARD
FSB INITIATION FOR APPROVAL
DEPUTY DIRECTOR STANDARDS BRANCH BUREAU OF FEDERAL SUPPLY (EXECUTIVE VICE CHAIRMAN FSB)
TECHNICAL COMMITTEE FSB PREPARATION OF "PRELIMINARY" AND "PROPOSED" DRAFTS
INDUSTRY AND INDUSTRY GROUPS PARTICIPATION
"PROPOSED" DRAFT PREPARED AFTER STUDY OF GOVERNMENT NEEDS AND COMMERCIALLY AVAILABLE ITEMS
STANDARDS BRANCH BUREAU OF FEDERAL SUPPLY "PROPOSED" DRAFT
"PROPOSED" DRAFT EDITED
GOVERNMENT AGENCIES & FSB CIRCULATED FOR COMMENTS AND LETTER APPROVAL
GOVERNMENT AGENCIES COMMENTS ASSEMBLED AND ABSTRACTS PREPARED
TECHNICAL COMMITTEE FSB PREPARATION OF "FINAL" DRAFT
INDUSTRY AND INDUSTRY GROUPS PARTICIPATION IF NECESSARY
"FINAL" DRAFT PREPARED AFTER CONSIDERATION OF GOVERNMENT AGENCIES AND FSB COMMENTS
STANDARDS BRANCH BUREAU OF FEDERAL SUPPLY "FINAL" DRAFT
"FINAL" DRAFT EDITED
DIRECTOR BUREAU OF FEDERAL SUPPLY APPROVED
GOVERNMENT PRINTING OFFICE (GPO) FOR PRINTING
TECHNICAL COMMITTEE FSB TECHNICAL CORRECTION
STANDARDS BRANCH BUREAU OF FEDERAL SUPPLY PRINTER'S PROOFS
PROOFS FROM GPO
GOVERNMENT PRINTING OFFICE FOR PUBLICATION
FEDERAL SPECIFICATION BOARD
FSB RECOMMENDATION FOR PROMULGATION
STANDARDS BRANCH BUREAU OF FEDERAL SUPPLY PRINTED SPECIFICATION
DIRECTOR BUREAU OF FEDERAL SUPPLY PROMULGATION
PRINTED FEDERAL SPECIFICATION FOR SALE TO INDUSTRY SUPERINTENDENT OF DOCUMENTS GOVERNMENT PRINTING OFFICE
GOVERNMENT AGENCIES NOTIFIED OF PROMULGATION BY DIRECTOR'S CIRCULAR LETTER
PRINTED FEDERAL SPECIFICATION DISTRIBUTION TO GOVERNMENT AGENCIES

Here's why we call it "Tripletite."
The top of this Continental can for paint seals the can by friction at three places—and keeps out air that causes paint skin. "Tripletite" cans are produced in sizes from the quarter-pint to the one-gallon size.

YOU ARE NEVER FAR FROM CONTINENTAL

Continental Can has 65 plants in the United States, Canada and Cuba, 16 field research laboratories and 63 sales offices.

(This advertisement originally appeared in full-color in TIME, BUSINESS WEEK and FORTUNE.)

THE SKIN NOBODY LOVES TO TOUCH

It's the skin that forms on paint. It's a mess, a nuisance to get rid of, and it represents waste of a good product.

It's caused by air getting into the can and oxidizing the paint. The way to stop paint skin from forming is to keep air out. Some paint-can tops aren't nearly airtight enough—particularly when the can has been opened and re-closed.

So Continental's development engineers came up with the "Tripletite" friction can. The top on this can is so designed that it grips the metal of the can itself at three places. Before any air can possibly get at the paint, it must get by not just one or two but three tight seals.

This ingenious construction protects against oxidation and also prevents loss of vital paint ingredients. All the standard paint cans Continental makes these days have this "Tripletite" feature. Watch for it the next time you open a can of paint.

If it's a packaging problem—it's our baby!

When you buy cans, drums or other containers from Continental, you can be certain that not only are you getting the best possible product now, but you'll get even better ones in the future. We've never seen a container so good that somehow it can't be made better. Right now over four hundred Continental research and engineering technicians are doing their best to improve the design and quality of scores of containers. *Your* product might look good—and sell faster—in one of them.

CONTINENTAL CAN COMPANY

CONTINENTAL CAN BUILDING

100 E. 42nd ST., NEW YORK 17, N. Y.

CAULKING COMPOUNDS

(*From page 18*)

the quality of sulfur absorbed; if some double bonds still exist there is the possibility of oxygen entering the oil molecule. As with sulfur chloride too much sulfur will result in a rubber-like mass having poor cohesion. It reacts in much the same manner as vulcanized rubber; the higher percentage of sulfur in the molecule the more brittle it becomes. For excellent elasticity and plasticity in caulking oils 4 to 8% sulfur is sufficient.

Pentaerythritol Treated Oils—The reactions of saturated and semi-drying fatty acids with tetrahydric alcohols results in a product having superior water resistance, outdoor durability and higher viscosity. Due to the high functionality of the pentaerythritol and its ether polymers such as dipentaerythritol and tripentaerythritol, the viscosities obtained when reacted with fatty acids are higher than the glycerol esters. Thus, better nonpenetrating qualities are obtained.

In spite of the existence of four hydroxyl groups in the structure of pentaerythritol, it is but slightly soluble in water. This insolubility is carried over to its esters where water resistance is excellent. The high functionality of pentaerythritol permits the use of non-drying fatty acids such as saturated fish liver acids. Where the glycerol ester results in a low viscosity oil, the pentaerythritol or dipentaerythritol esters will produce oils of much higher viscosity.

The use of non-drying fatty acids, such as fish liver acids, will decrease the possibility of a gel formation due to its low functionality; the result of lack of many double bonds in its structural make-up. With the pentaerythritols, the use of fatty acids such as fish liver is essential to obtain a satisfactory caulking oil. Semi-drying fatty acids will react with the pentaerythritols to produce a rapid drying oil. This is detrimental to caulking compounds because such oils tend to harden rapidly on ageing.

Experience has taught caulking compound manufacturers that semi-drying oils are the best for all round performance. They remain soft and elastic for a longer period of time, thus enhancing materially the ability of the product to cling to the surface it has to protect. It will also withstand the stresses set up due to vibration, and due to the contraction and expansion of the building and the compound with change in temperatures.

Limed Oils—Limed oils are sometimes used in caulking compounds because of their excellent non-penetrating qualities. The hydrated lime is reacted with the oils at temperatures of 400 to 500 degrees F to form calcium soaps having a gel-like structure. The oil loses its flow and becomes "short" due to the presence of soap-like products. This shortness aids materially in preventing the caulking compound from sagging. Here again, too much lime will result in products having poor cohesion and poor exterior durability.

Two to four per cent lime is sufficient to produce an oil having all the desirable qualities of shortness, non-penetration and body. Care must be exercised to prevent the presence of free lime dispersion in the oil after cooking. This will invariably result in increased body on ageing. Sometimes it will be apparent within a week. Proper cooking, utilization of least lime as possible, and filtering usually alleviate objectionable after bodying.

Manufacture

THE manufacture of caulking compounds is effected by simple mixing of all the ingredients involved. The equipment used are heavy-duty mixers for the gun grade type, and the Werner-Pheidler or Baker Perkins dough mixer type for the knife grade products. The gun grade compound should be allowed to mix for approximately one hour after all the ingredients have been added; and the knife grade material must mix anywhere from one and one-half to two hours in order to obtain sufficient texture and wetting of the pigment. An insufficient run will result in a "short" and dry product having poor application properties. A longer run for the same product will give the vehicle time to be absorbed by the pigments, resulting in a long elastic and easily workable product. Exactly the same precaution applies to the gun grade except that it is not necessary to run the batch the same length of time due to the higher oil content which makes mixing considerably easier.

The vehicle is first added to the mixer followed by coarser pigments, and then by the finer pigments. Mixing time is allowed between additions so as to prevent a very stiff mass from forming, thus resulting in an extra heavy load on the mixer. This mixer permits the vehicle to wet the pigment and thereby producing a softer and more pliable mass. This is especially true in the production of the knife grade compound where double and sometimes triple the amount of pigment is used.

Testing

Gun Grade—The gun grade product is tested for viscosity and slump in the plant. A mobilometer is used for testing viscosity or consistency and the results are reported in seconds.

Slumping or sagging is determined by the use of a rectangular steel trough, according to Government specifications. The trough is filled with the compound, and suspended in a vertical position for 24 hrs. at 75° F. It is then placed in an oven at a temperature of 120° F. for 24 hrs. At the end of this period, the compound shall not flow or slump more than 3/16". In production the waiting period is too long, and usually a shorter time at an elevated temperature is employed; 1 hr. at 130° F. is sufficient.

Knife Grade—The knife grade caulking compound is tested for consistency and texture. Texture is simply tested by kneading with the hands to determine its "feel" and workability. Consistency is determined by the use of a penetrometer.

Other tests such as tenacity, rate of hardening, bond and shrinkage, and oil retention are determined before formulation reaches the factory stage. Obviously all tests cannot be performed in the plant. Once the proper formula has been decided upon, consistency and slump tests are the only tests necessary. In the laboratory other tests are performed as per government specifications TTC 598.

NOW!

A SOLVENT for ODORLESS PAINTS

Shell 410 E.P. Thinner

Available in substantial quantities for the trade

REPEATED USE of this type solvent in paints for stores, hospitals, hotels and homes has demonstrated that use by occupants *immediately after painting* is perfectly practicable . . . gone are objectionable odors that bring delays and complaints. A significant trend in this direction is already established in the industry.

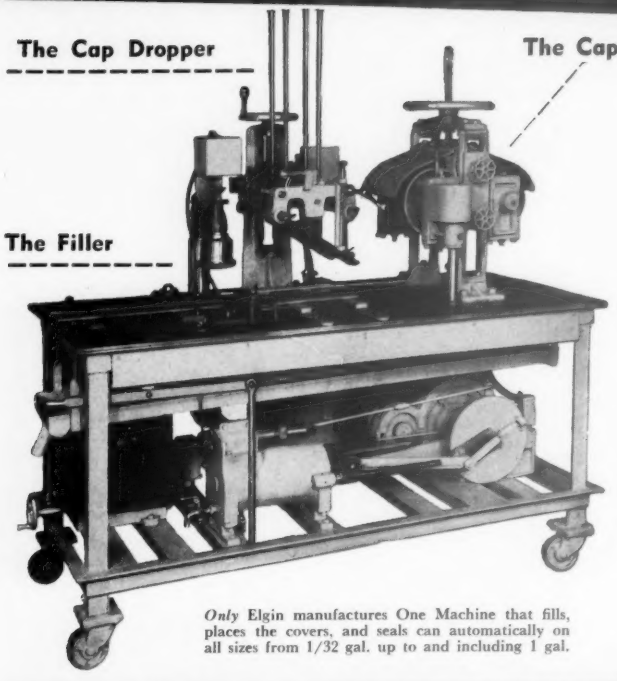
We will be glad to send you additional information about Shell 410 E.P. Thinner. Samples for your evaluation will be sent upon receipt of your letterhead request.

SHELL OIL COMPANY

50 WEST 50TH STREET • NEW YORK 20, NEW YORK

SHELL

CUT COSTS! Get high-speed, trouble-free production with



Only Elgin manufactures One Machine that fills, places the covers, and seals can automatically on all sizes from 1/32 gal. up to and including 1 gal.

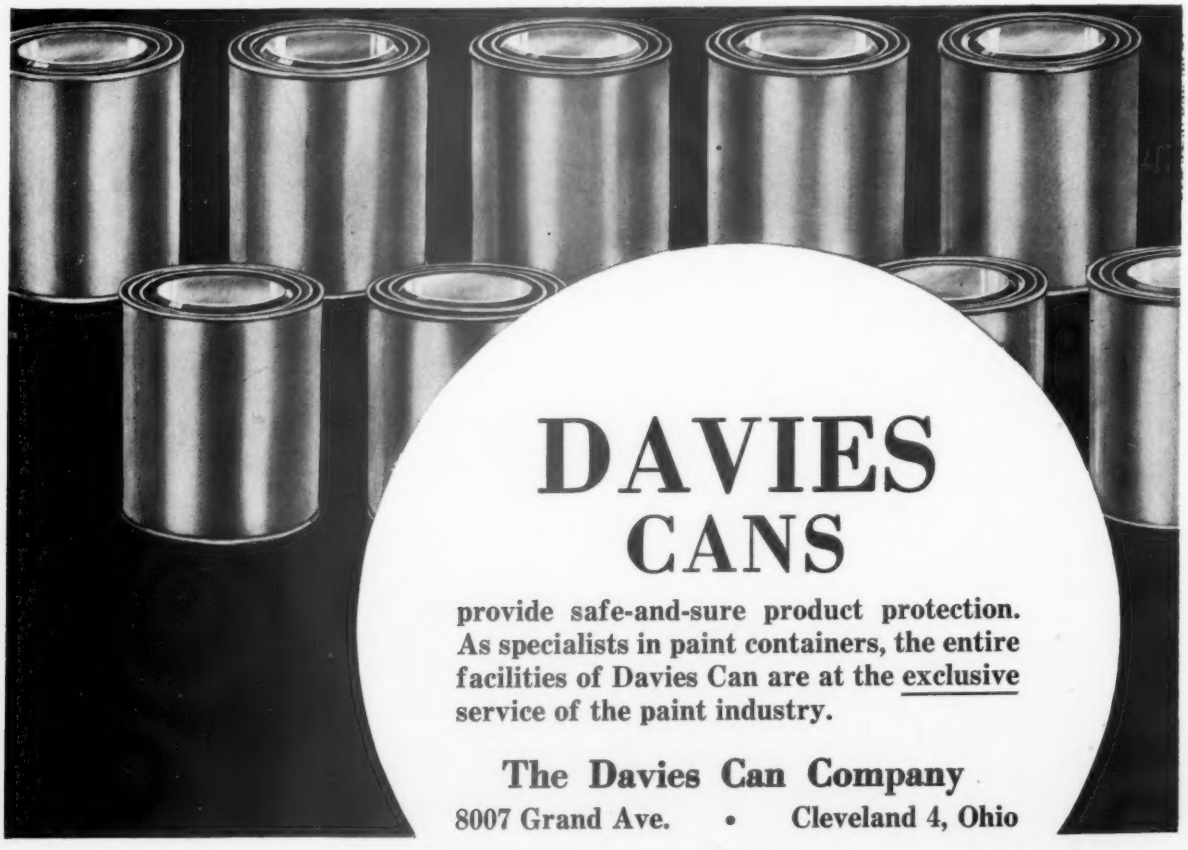
Elgin Model H

Paint Filler with Cover Dropper & Capper

Cost-Wise paint manufacturers in large and small plants know the many advantages of Elgin automatic filling and capping equipment. For example the Elgin Model 'H' fills paints, enamels and lacquers, places covers, and seals all sizes of cans with double friction covers . . . completely automatic. For lower initial cost, minimum maintenance and operating expense, choose Elgin filling and capping machines.

Write Today for New Folder illustrating Elgin Equipment Address Dept. VA

ELGIN MANUFACTURING COMPANY • 200 BROOK STREET • ELGIN, ILLINOIS

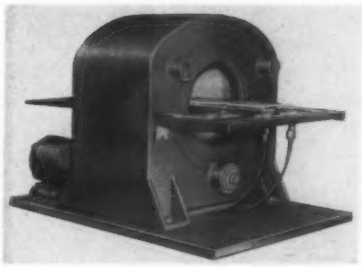


DAVIES CANS

provide safe-and-sure product protection. As specialists in paint containers, the entire facilities of Davies Can are at the exclusive service of the paint industry.

The Davies Can Company

8007 Grand Ave. • Cleveland 4, Ohio



GYROMAT

COATING MACHINE
For Bulky Material

The Norris Gyromat coating machine offers saving in time, money, and material in coating processes. Gyromat applies a full coverage coating of from .0008 to .025 inch thickness of any coating material in one passage, at high speed. This is accomplished by means of high speeds rotors which atomize and direct the paint to the work being passed through the rotating bowl. Excess material is caught by a rotating inner bowl and returned to the annulus in its former fluid state and reused. This machine is used to coat ceramics, delicate electrical relays, electronic parts, plastic items, etc. The Gyromat Corp., P. O. Box 600, Fairfield, Conn. PVP—June.

FORK TRUCK
Light in Weight

This fork truck was especially developed to meet the needs of small and medium-sized plants, and incorporates these features:

It is light in weight; is small in overall dimension (the smallest standard fork truck on the market); provides maximum visibility for the operator; permits stacking in freight cars and motor trucks; is safe and easy to maneuver; requires little maintenance. Market Forge Co., Everett, Mass. PVP—June.

ASBESTOS GASKETS
For Rough Surfaces

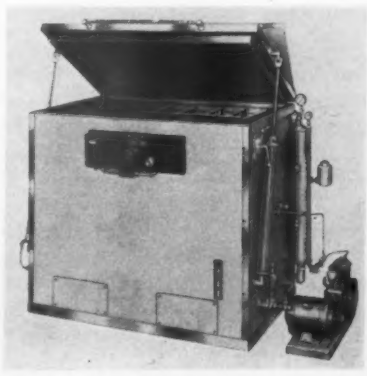
Designed to give service where surfaces are rough or uneven and subject to considerable expansion and contraction, these asbestos gaskets are offered.

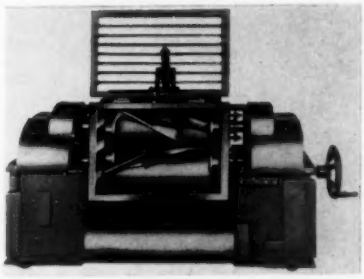
They are used to hold steam, air, water, ammonia, and various other acid and alkali chemicals in storage tanks, cookers, dryers, laundry machinery, etc. For complete information write to Lawton H. Parsons, 6 South Main St., Ambler, Pa. PVP—June.

TEST CABINETS
For Corrosion Tests

This cabinet will meet all essential requirements of salt-fog testing. These include the requirements of the Army, Navy, Air Force, Bureau of Standards, and the recommendations of the A. S. T. M. These cabinets are used for determining corrosion-resisting qualities of lacquered, painted or similarly coated products and test specimens. Humidity corrosion testing, in relative humidities of 95 to 100% at controlled temperatures of 80–100 degrees F is another feature of the unit. For further details, write to the Industrial Filter & Pump Mfg. Co., 500 Ogden Ave., Chicago 50, Ill. PVP—June.

INDUSTRIAL FILTER





CHARLES ROSS

KNEADER
Double-Bladed

Known as the 41L model, this kneader is double-bladed, with different stirrers available for operation at the same or differential speeds. Quick-dumping of material is made easier through an arrangement permitting manual, hydraulic or motorized tilting. In addition, an optional two-speed motor expedites thinning down prior to dumping. There are other optional features that make the 41L one of the most adaptable units. These include various types of covers and jackets for both cooling and heating operations plus a variety of sizes up to 150-gallon capacity. Charles Ross & Son Co., 148 Classon Ave., Brooklyn, N. Y. PVP—June.

PORTABLE MIXERS
Explosion-Proof

Portable power mixer is built in both plain and direct drive types and geared type models in ¼, ½, and ¾ h.p. sizes. These are available with both open and explosion-proof motors. This mixer is light and of study construction. Adjustment is accomplished with one simple locking device. All units are supplied with stainless steel shafts and propellers. The Patterson Foundry & Machine Co., East Liverpool, Ohio. PVP—June.

NEW PRODUCTS

PRECISION SCIENTIFIC

DISTILLING APPARATUS

Automatic

In cooperation with the Shell Development Company, Precision Scientific Company has announced the completion of an automatic distillation apparatus. The instrument will perform the following ASTM tests: D86, Distillation of Gasoline, Naphtha, Kerosene and Similar Petroleum Products; D 268, Sampling and Testing of Lacquer Solvents and Diluents; D 1078, Distillation Range of Lacquer Solvents and Diluents; D 447, Distillation of Plant Spray Oils. With a slight modification, the instrument can be used for D 216, Distillation of Natural Gasolines. It is also applicable for the organic chemistry industries and has wide use in any college, testing or industrial control laboratory.

Delivery: About six months. For further details write to: Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill. PVP—June.

TALLATE DRIERS

Light Color

High quality tallate driers have been developed by Witco Chemical Company under the trade name Witalls.

Witalls combine excellent drying power and light color in uniform, controlled products, according to the company. Their reliable metal content, stability to storage, freedom from objectionable odor, and wide range of compatibility with paint vehicles assure their acceptance as regular driers comparable to naphthenates and octoates. Though slightly more viscous than naphthenates, in almost all formulations they can be substituted pound for pound.

A technical report on the typical properties of Witalls may be obtained by request from the Witco Chemical Compan, 295 Madison Avenue, New York, N. Y. PVP—June.

INHIBITOR

Protects Shellac

Inhibitor protects shellac and other non-aqueous liquids from metal contamination.

Inhibitor 038, is especially valuable in view of National Production Authority restrictions on shellac containers.

The new inhibitor prevents iron pick-up, by forming a thin coating of a complex iron phosphate on the inner wall of the container. The reaction prevents the metal from becoming soluble in the shellac.

Twelve-month shelf aging tests demonstrated that Inhibitor 038 could be of service to shellac cutters whose products normally require packaging in heavy terne coated cans. The tests indicated that one-half to one per cent of Inhibitor 038 in eight-pound terne-coated containers provided satisfactory protection from iron contamination for a minimum shelf life of one year. A minimum of one per cent of the new product was necessary to protect most commercial shellacs in SCMT plate. PVP—June.

INORGANIC EXTENDER

Low Vapor Adsorption

Processed products from perlite are dry white powders have a chemical composition high in silicates and aluminum oxide with a very small percentage of other elements. They are completely inorganic and are insoluble in water and most acids and contain no oxidizing elements. They have extremely low electrical conductivity and vapor adsorption. Great Lakes Carbon Corp., Perlite Div., 18 E. 48th St., New York 17, N. Y. PVP—June.

SOLVENT MIXTURE

Extender for Alcohol

Mixture of methanol, ester, aldehydes, and acetals acts as a solvent and coupling agent. Known as Solvent 62, this material is available in tank-car quantities at low costs. According to the manufacturer, the following resins are soluble to the extent of six percent or more in Solvent 62: cellulose nitrate, cellulose acetate, cellulose acetate-butyrate, ethylcellulose, acrylate, vinyl acetate and vinyl butyral. The Quaker Oats Co., Chemicals Department Merchandize Mart Plaza, Chicago 4, Ill. PVP—June.

LIFT DEVICE

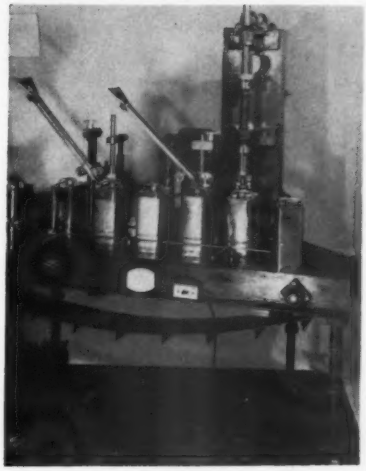
Laboratory Aid

Easy positioning of heavy and/or hot laboratory equipment at various levels above the workbench is afforded by use of an improved "Lab-Lift" device.

Heavy kettles, reaction flasks, cold and hot baths, and similar vessels are held safely on the Lab-Lift, or moved up or down so they can be attached or removed from reaction trains, etc. Fisher Scientific Co., 717 Forbes Street, Pittsburgh 19, Penna. PVP—June.

FISHER SCIENTIFIC

NEW PRODUCTS



UPRESSIT

AUTOMATIC CAPPER
Compact and Portable

Fully automatic, except for manual loading of cans, caps, and bands, this new machine will handle all sizes from pint cans to two gallons. Irrespective of size it will cap, band, and crimp the bands of 21 cans a minute according to the manufacturer.

The machine is fitted on legs which can be varied in height to suit filling operations. The closure seals airtight, preventing loss from leakage, evaporation, and staleness. The visible tamperproof bands assure the consumer of the authenticity of the contents. Uses for the caps include containers for paint and varnishes, lacquer, shellac, turpentine, linseed oil, etc. Upressit Products Corp., 420 Lexington Ave., New York 17, N. Y. PVP—June.

STEAM CLEANER
For Mixers and Kettles

This all-electric units is recommended for cleaning mixers, kettles, conveyors, cabinets, etc. It is easily moved from one job to another. Use of steam from built-in generator permits effective and economical use of detergents in small amounts. There is no flooding of working area, no smoke, flames or smoke-hazard. Known as the Speedylectric JC-20, this unit is manufactured by the Livingstone Engineering Co., 100 Grove St., Worcester Mass. PVP—June.

CARBOY TILTER
Safe Handling of Acids

Carboy Tilter with pouring spout assures a safer and easier method of pouring acids and other liquids from carboys.

The soundly functional design of this unit saves time, effort, and materials by its quick, easy action and advanced safety features. Long and dependable service is assured by structural steel supporting members with welded and riveted construction. General Scientific Equipment Co., 1015 Packard Bldg., Philadelphia 2, Pa. PVP—June.

CRUCIBLE TONGS
Provides Safe Handling

For those who work around laboratory furnaces, a product has been developed for safe handling of sample crucibles. With the new Fisher Jumbo Crucible Tongs, no longer must the operator's hands be exposed to extreme furnace heat.

These tongs are nearly 21 inches long, and are made of 18/8 stainless steel. In perfect comfort the technician may reach inaccessible and distant corners of most laboratory furnaces and ovens. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa. PVP—June.

INVENTORY PROBLEM SOLVED

Versatility of Sun Spirits Provides Paint Maker With One Dependable, All-Purpose Solvent

A manufacturer of commercial and industrial paints could not find an all-purpose thinner. He tested many solvents over the years. Every one he tried was either limited in use to specific products or too low in solvency. Not one maintained uniform quality. Lacking an answer to his problem, he was forced to carry a large inventory. But this proved unwieldy and frequently upset production. For example, a solvent tagged for one kind of batch all too often turned up in another.

Then one of our representatives introduced him to Sun Spirits To his delight he found it to be the all-purpose thinner he sought. By using it exclusively he cut down his tankage. This, incidentally, reduced his fire insurance and his taxes. Today, 21 years later, this satisfied customer points out that the quality of Sun Spirits always remains uniform and dependable.

Sun Spirits is refined under rigid controls; it can always be relied on for uniformity, high solvent qualities, even dispersion, excellent wetting-out. Volatility is restricted within close limits. For information about "Job Proved" Sun Spirits get in touch with your nearest Sun Office.

SUN OIL COMPANY • Phila. 3, Pa.
In Canada: Sun Oil Company, Ltd.—Toronto and Montreal

SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY

SUNOCO

NEW PRODUCTS

RUBBER-FABRIC DRUM

For Shipping Paints

United States Rubber Company has developed a new 55-gallon synthetic rubber-fabric drum, suitable for shipping liquids, which can be collapsed after emptying, is returnable and reusable. Limited quantities are already being produced for essential uses in the petroleum and liquid chemical fields.

The new drum should effect sizable savings in return shipping costs, since more than 2500 collapsed drums can be shipped in a standard railroad box car that would hold only 300 rigid drums.

Experimental tests made by United States Rubber Company indicate that the new drums will be suitable for the shipment of oils, greases, fats, acids, paints, emulsions, soaps, dry powders and a variety of pharmaceutical and industrial chemicals. PVP—June.

TRANSFER PUMP

Capacity of 22 gpm

Air-operated fluid transfer pump is designed for transferring thinners, naphthas and other non-corrosive chemicals. This pump has a capacity of 22 gpm. It fits all 2 inch opening drums, and is made of steel. For further information write to the Lincoln Engineering Company, 5780 Natural Bridge Ave., St. Louis, Mo. PVP—June.

For simulated chrome finishes—

MD 769 ALUMINUM PASTE

—provides maximum brilliance and metallic lustre

MD 769 is a special extra fine lining pigment yielding films of the *highest chrome-like appearance* possible to obtain with a metal pigment.

MD 769 provides a degree of *improved dispersibility* unobtainable in other similar materials. Mixtures made with it are practically free of agglomerated particles. With its use, the utmost in smoothness and leveling are obtained.

MD 769 is particularly recommended for *simulated chrome finishes* for automotive use. It provides a good substitute for chromium plating.

It will pay you to investigate the advantages of MD 769 ALUMINUM PASTE as applied to your industrial finish problem. *Send today* for sample and full information.

Complete line of MD ALUMINUM PIGMENTS & POWDERS to meet a wide range of Industrial Finishing applications.

METALS DISINTEGRATING COMPANY, INC.

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Sales Offices: Chicago, Ill., Cleveland, Ohio
Plants: Elizabeth, N. J., Manchester, N. H., Berkeley, Calif., Emeryville, Calif.

1201 MD POWDERS Since 1916

ALUMINUM PASTES
ALUMINUM POWDERS
GOLD BRONZE POWDERS

GREEN-GOLD PIGMENT

Lightfastness

Dupont Green-Gold YT-562-D has excellent lightfastness and will not fade even when extended to very pale tints, according to the manufacturer. Because of its good baking resistance and its transparency, striking "gold" effects are possible. Gives distinctive color effects in blends with "Monastral" blue or green. E. I. Du Pont de Nemours & Co., Inc., Pigment Department, Wilmington, Del. PVP—June.

DIMER ACID

Heat Stable

Emery 955 Dimer Acid (dilinoleic acid) is a liquid, dibasic acid, viscous in nature, with an apparent molecular weight of approximately 600. It has excellent heat stability and low volatility. It undergoes the carboxyl group reactions typical of a monomeric acid. But, more than that, its polyfunctional nature allows polymerization, resinification, or similar type reactions with polyalcohols, polyamines, polyvalent metals, etc.

It forms both soluble and insoluble soaps. Its long chain polyesters have rubber-like properties. Polyamide resins of Dimer Acid exhibit a low melting pt. and are water resistant. It also acts as a bodying agent in surface coatings and is a partial replacement for hard-to-get drying oils.

A new 16 page bulletin on Emery 955 Dimer Acid is available upon request from Emery Industries, Inc. Dept. 5, Carew Tower, Cincinnati 2, Ohio. PVP—June.

RUBBER PRIMER

For Bonding Silicone Rubber

Designated as G-E 81267 primer, this new development is a thin, light-colored liquid. By using it, G-E silicone rubber 81223 can be bonded to almost any surface. Bonds to glass, ceramics, aluminum, steel, tin, and copper are possible, and sheer strength measurements of bonds on steel are approximately 700 lbs. per sq. in. A unique feature of G-E 81267 primer is its ability, in most cases, to develop a bond strength greater than the strength of the rubber at any stage of the cure. General Electric Co., Chemical Div. Pittsfield, Mass. PVP—June.

GENERAL SERVICE

(*From page 24*)

Assisting each Committee is a technologist from the Standards Branch of the Bureau of Federal Supply, an engineer whose speciality lies within the scope of the Committee.

Preliminary drafts of specifications are sent to manufacturers, to recognized technical and professional societies and journals, and to Federal departments and establishments for comment and suggestions. Revisions are then made, the final step being approval and promulgation by the Director of the Bureau of Federal Supply. The specification is then available for use by the Government and others outside of the Government who may wish to use it.

Federal Specifications are written so that they will be convenient for use by purchasing and requisition officers, receiving personnel, inspectors in the field or laboratory, manufacturers and jobbers, and direct users of merchandise. Every Federal Specification follows the same General Outline of Form.

Individual sections covers:

A. Information about other Federal Specifications to which references are made.
B. Types, classes, grades, sizes, and colors.
C. General and detailed requirements for the commodity.
D. Methods of sampling, inspection and tests.
E. Requirements of packaging, packing, and marketing.
F. Requirements applicable to individual government departments.
G. Special notes.

The Federal Specifications were established to obtain the best value in terms of quality and prices for the Government through impartial competitive bidding on clear, concise standards. They admit to bidding all suppliers with nonproprietary quality products. Adequate specifications protect both the Government and the producer by clarifying requirements and by making requirements definite. Uniform specifications, with unnecessary grades and varieties eliminated, permit volume purchases at reduced costs.

Some of the ways Federal Specifications benefit Government are:

1. Reduced cost through more competition
2. Better deliveries
3. No sales pressure on buyer
4. Minimum confusion over interpretation of requirements.

Some of the ways Federal Specifications benefit industry are:

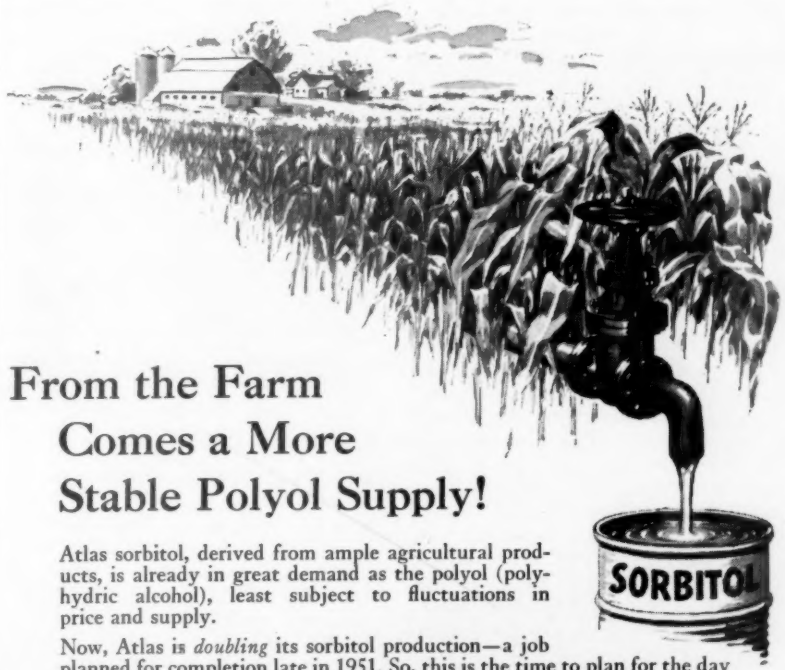
1. Reduced cost of production.
2. Reduction of types produced.
3. Elimination of nonstandard items.
4. Establishment of well defined purchase standards.
5. Simplification of supply.

A new specification is prepared whenever there is sufficient demand for its use. Usually the request for a new specification originates in the Federal Specifications Board, the Technical Committees, or the Specification Division of the Bureau of Federal Supply. However, consideration is given the need for the development of a new specification upon request from any source. Address your requests to Standards Branch, Bureau of Federal Supply, General Services Administration, Washington 25, D. C.

Paint

PAINTS procured by the Federal Supply Service are tested for conformance to the specification either in the laboratory of the supply center, by utilizing available government facilities, or by contract to independent laboratories. At least one

(*Turn to page 41*)



From the Farm Comes a More Stable Polyol Supply!

Atlas sorbitol, derived from ample agricultural products, is already in great demand as the polyol (polyhydric alcohol), least subject to fluctuations in price and supply.

Now, Atlas is *doubling* its sorbitol production—a job planned for completion late in 1951. So, this is the time to plan for the day when this important new polyol supply will be available . . . the time to plan to make the most of the advantages of sorbitol-based vehicles.

Atlas sorbitol is the polyol of outstanding purity and color which offers you demonstrated advantages in the synthesis of hard gums, "in situ" varnishes, tall oil esters, alkyd resins. Sorbitol-based vehicles give you the range of control you want on melting points . . . viscosities . . . solubilities in your maleic and phenolic modified resin esters.

Write for the Atlas booklet giving practical formulas and specific directions for making sorbitol-based vehicles. It includes many suggestions for new products.

ATLAS INDUSTRIAL CHEMICALS DEPARTMENT

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowco*
ATLAS POWDER COMPANY, CANADA, LTD., Brantford, Canada

American Can Elects Two New Vice Presidents

T. E. Alwyn, general manager of sales, has been elected vice president in charge of sales and R. F. Hepenstal, former assistant general manager of manufacture, has been elected vice president in charge of manufacture, according to an announcement by W. C. Stolk, president of the American Can Co.

•

Proposed Federal Specification For Zinc Chromate Primer

The proposed Federal Specification for primer, zinc chromate fills a need separate and distinct from that is covered by Military Specification MIL P-6889. The proposed specification is also different in purpose from Federal Specification TT-P-57 which contemplates a primer for ferrous metal surfaces; the subject specification product would be used on aluminum and magnesium alloys.

•

R. Kriney Represents Advance Solvents in Cleveland

Mr. A. B. Mullaly, president of Advance Solvents & Chemical Corporation, has announced the appointment of Mr. Richard L. Kriney to represent the firm in the Cleveland, Ohio, territory. Mr. Kriney will cover the paint, varnish and plastics industries.

He will also work in cooperation with Mr. J. A. Kendall, who is well known in the rubber industry, and who has represented Advance Solvents & Chemical Corporation in that field for many years.

•

Richard L. Kriney

Dr. Wouter Bosch of North Dakota Agricultural College

Two Paint Courses Offered at N. Dakota Agricultural College

The 4th annual paint short course for beginners, July 9–July 20, 1951 is open to anyone who is interested in paints, varnishes, and lacquers. There are no prerequisites for registration. Lectures will deal with the manufacture of paints and varnishes as well as with the technological investigation of the same. In the laboratory the students cook varnishes and other vehicles, and prepare paints on various types of roller mills.

The special advanced paint short course is scheduled for Aug. 6 through Aug. 17, 1951. The purpose of this course is to familiarize men from industry and other interested parties, who have had sufficient previous experience in the field of protective coatings, with modern and advanced concepts of the paint and varnish industry. The discussions will cover latest developments in the field of pigments, vehicles, solvents, and driers. Modern methods of pigment dispersion and varnish cooking will be taught, both in theory and in practice.

Both courses consist of 20 lectures and 10 laboratory periods, and are under the direction of Dr. Wouter Bosch, chairman of the department of paints and varnishes, and will be held at North Dakota Agricultural College, Fargo, North Dakota. Registration blanks may be obtained from Dr. Bosch at the above address.

•

New Address For Naftone

Naftone, Inc. specializing in chemicals for the paint industry has announced their new location at 515 Madison Ave., New York, N. Y.

Atlas Powder Appointments

Kenneth E. Mulford has been appointed General Manager of Atlas Powder Company's Industrial Chemicals Department, succeeding J. R. Frorer, who was elected a vice president of the company at a meeting of the Board of Directors May 2, 1951. J. Peter Kass was named Director of Research and Development Department, succeeding K. R. Brown, who was elected Vice President.

•

Du Pont Opens New Experimental Station

Du Pont threw open its new $30,000,000 Experimental Station addition recently for a group of some 200 leading university and industrial scientists assembled for its dedication.

The recently completed expansion makes the Station one of the largest research establishments in American industry, housing nearly half of the company's research personnel.

•

Hercules Western Appointments

The appointment of an additional technical sales representative for the West Coast and the assignment of a new sales representative to the Chicago office were announced by Hercules Powder Company's Synthetics Department.

B. J. Dougherty has been assigned to Hercules' Los Angeles office, where he will assist the West Coast sales manager for Synthetics Department. Norman D. Green has been named to succeed Mr. Dougherty in the Chicago office.

Milford H. Corbin

M. H. Corbin Heads New York Paint Manufacturers Ass'n.

Milford H. Corbin was elected President of the New York Paint, Varnish and Lacquer Association at the annual dinner meeting held in the Statler Hotel on May 17. Mr. Corbin is President of the Standard Varnish works and Toch Bros. Inc. of Staten Island and Chicago. He is a graduate of Lehigh University and a leading writer on electro-deposition of non-metallic materials, finishing materials, of zinc and other related subjects. He is a member of the American Chemical Society and American Society of Testing Materials, a Fellow of American Institute of Chemists and a member of the Chemists' Club.

•

1951 Organic Coating Conference

The Gordon Research Conferences sponsored by the AAAS, formerly known as the Gibson Island Research Conferences, for 1951, will be held June 18–August 31 at the New Hampton School, New Hampton, N. H.

Requests for attendance at the Conferences, or any additional information, should be addressed to W. George Parks, Director, Dept. of Chemistry, Rhode Island State College, Kingston, R. I.

Program for 1951 Organic Coatings Conference:

June 18—G. M. Powell. Coatings from Organosol and Plastisol Dispersions. D. Todd. Some Rheological Aspects of Vinyl Plastisols.

June 19—O. R. McIntire. Coatings Properties of Synthetic Latices. W. Bosch. Coatings from Styrene-Butadiene-Drying Oil Emulsions.

June 20—J. D. Ferry. Properties of Films and Coatings of Biological Origin. R. Grinsfelder. Strength of Surface Coatings.

June 21—T. W. Dakin. Electrical Measurements of Organic Films and Their Interpretation. S. Gusman. Studies of the Mechanism of Crater Formation in Baked Surface Coatings.

June 22—S. W. Reinhart. Theories of Adhesion.

•

Goodyear Appointments

Clinton O. McNeer, Chicago district sales manager for the Chemical Division of The Goodyear Tire & Rubber Company, has been named sales manager of the division with headquarters at Akron.

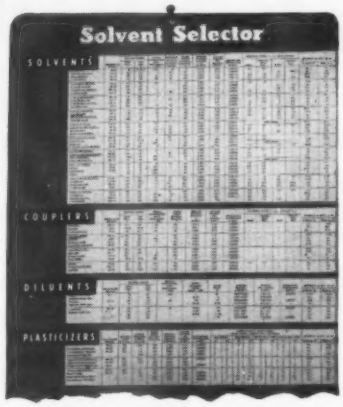
Announcement of Mr. McNeer's promotion, effective April 1, was made here by H. R. Thies, division manager. McNeer will be succeeded at Chicago by J. A. Weatherford who, for some time, has served as a special representative for the Chemical organization in the Chicago territory.

Announced by Thies at the same time was the establishment of a district office at St. Louis with Robert E. Workman as manager. Prior to this time, Workman has been serving accounts in the St. Louis area as a field representative reporting to McNeer in Chicago.

•

Amsco Names Midwest Representative

William A. Oudshoern has been appointed as a sales representative for American Mineral Spirits Company. Bill Oudshoern will represent Amsco in the middle west territory in connection with further expansion of Amsco's sales staff.



Down from the Wall to your FINGERTIPS

Have helpful data on 75 ester, ketone, and glycol-ether solvents, couplers, and plasticizers right at your fingertips. CARBIDE's Solvent Selector Chart is now available in business-letter size for convenient stay-in-your-chair reference. You can keep it in the pocket of your desk pad.

Call the nearest CARBIDE office for your copy (be sure to ask for F-7465, the desk-size version), or write to:

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A Division of
Union Carbide and Carbon Corporation
UCC

30 E. 42nd St., New York 17, N.Y. Offices in Principal Cities
In Canada: Carbide and Carbon Chemicals, Limited, Toronto

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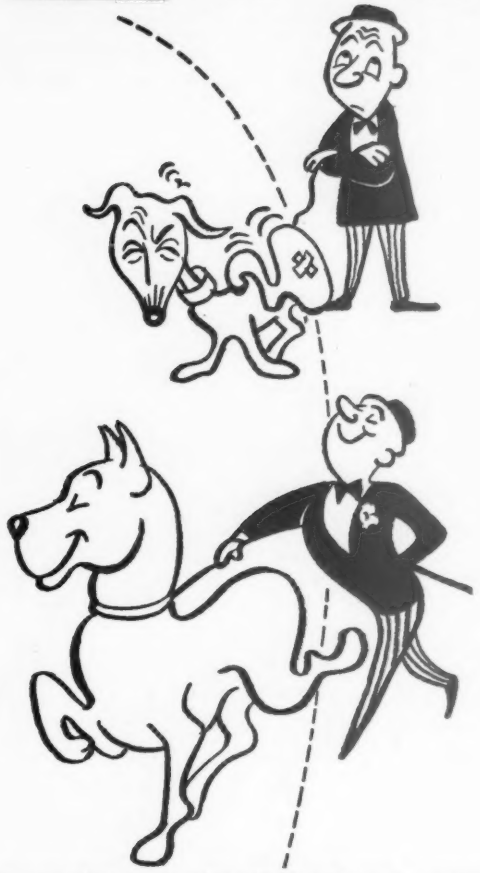

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GET IT FROM... Barrett*

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- CRESYLIC ACID
- CUMAR* Paracoumarone-Indene Resin
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- WIRE ENAMEL SOLVENT
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- SHINGLE STAIN OIL
- ★TOLUOL
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★ These coal-tar solvents delivered by express tank truck in the following areas. Phone your order.

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Chicago	Bishop 7-4300	Newark	Mitchell 2-0960
Cleveland	Cherry 5943	New York	Whitehall 4-0800
Detroit	Vinewood 2-2500	Philadelphia	Jefferson 3-3000
		St. Louis	Lockhart 6510

Hi-Flash Solvent available at all stations, except Buffalo.

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FALKYD RESINS insure perfect performance in your products!

Backed with an outstanding World War II service record, Falkyd Resins step to the front in the mobilization program. As key raw materials, they play a vital part in the manufacture of a wide variety of finishes and protective coatings including those for tanks, ships, ammunition, aircraft and jeeps.

If you have an Army or Navy Specification to meet... the facilities of our laboratory and staff are at your disposal... to help find the right Falkyd Resin to meet your specification requirement.

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PLANTS: EDGEWATER, N. J. • PHILADELPHIA, PA. • CARNEGIE, PA. • MINNEAPOLIS, MINN.

Wayne H. Clum

Falk Appoints Wayne Clum Technical Representative

Wayne H. Clum has been appointed as technical representative in the Western Sales Div. of Falk & Company with offices in Chicago. Mr. Clum was formerly associated with the Hilton Davis Chemical Company in research and production.

•

Canadian Institute Conference

For the three days of June 18, 19, and 20, Winnipeg will be the mecca for Canadian chemists and chemical engineers attending the 34th Annual Conference of The Chemical Institute of Canada. In addition to the 76 technical papers, other attractions at this conference will include the presentation of The Chemical Institute of Canada Medal for meritorious service to the profession, the delivery of the Leroy Egerton Westman Memorial Lecture, and plant visits.

Among the papers on the subject of protective coatings are: Determining fire-retardant values of surface coatings; The use of magnesium in underground pipeline protection; Wax-type protective coatings for industry; and Modern red lead paints.

•

Love Addresses Pittsburgh Club On Government Specification

Iron Oxide and Chromium Oxide Pigments as related to their use in meeting Government specifications was the subject presented before the April meeting of the Pittsburgh Paint and Varnish Production Club.

Charles H. Love, of C. K. Williams & Co., Incorporated, was the speaker and illustrated his subjects by means of slide films.

Mr. Love reviewed the physical and chemical properties of the Oxides, with particular stress on particle size, durabilitiy, range of color and infrared reflectance. Both spectrophotometric curves and infrared photographs of the Pigments were shown to illustrate the use of the Oxides in the various types of infrared camouflage paints. Mr. Love also presented suggested Pigment combinations of the formulation of the more widely used military specification paints now being purchased by the Department of Defense.

Because of the wide interest in the subject of Government specifications, Mr. Love will present his material at forthcoming meetings of the Cleveland and Buffalo Paint and Varnish Production Club.

•

Glidden Co. to Increase Linseed Oil Production

Production of linseed oil at the Glidden Company's Buena Park, California, Vegetable Oil Plant will be sharply increased by the installation of a new type quarter-million dollar extraction plant.

By the installation of this new process, the Buena Park plant will be able to use the equipment for various oil bearing seeds. Another advantage is that the new process is an outdoor operation, a great factor of safety.

HOT LACQUER

THE HOTTEST THING IN COATING!

Thousands of manufacturers are using the hot-lacquer process today. Over 250,000 gallons of hot lacquer are being applied each month. Hot lacquer is going on automobiles, furniture, store fixtures, radio cabinets, furnaces, tool boxes, paper, jewelry, steel drums, aircraft equipment, wall tiles, scales. pianos, and washing machines.

Why all the acclaim? Hot lacquer covers better, flows better, dries fast, won't sag, won't blush, rubs and polishes easily, cuts spraying time, slices labor and material costs, and ups quality.

With the dedication by CSC of its hot-lacquer process (U. S. Patent No. 2,150,096) to the lacquer industry, hot lacquer's been going great guns. See what a job it can do for you. See your lacquer supplier.

CSC

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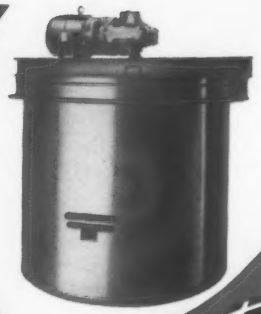
THOROUGH and RAPID MIXING

For more efficient, rapid and economical mixing of various types of heavy, semi-paste and liquid material . . . it has been proved that a Ross Mixer will give years of dependable service. There is a Ross Mixer designed to meet your requirements from the new Ross #130 EL Laboratory Change Can Mixer of 1 and 2 gallon size to 1,000 gallon size and larger.

Write today for complete details on Ross Mixers or Ross Three-Roll Mills.



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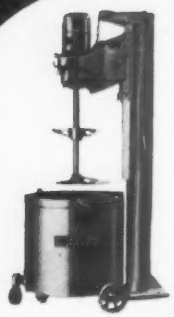
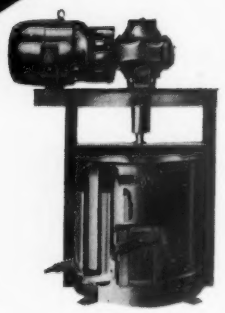
Ross



2

1. #36 LIQUID MIXER. Available in 50 to 2,000 gallon and larger capacity. For mixing, blending or as an agitator storage tank.

2. #131 AB — HEAVY DUTY CHANGE TANK MIXER. For thinning down, shading, and tinting standardized batches of paints, enamels or lacquers. Motor: Explosion-proof.



3

3. #132 — NEW MODEL HEAVY DUTY PASTE MIXER. From 50 to 150 gallon capacity. For rapid and thorough mixing of all types of pastes or semi-paste materials. New designed stirrers assure more uniform and rapid mixing. New large size gate for rapid discharge. New type motor drive.

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MICA WATER-GROUND "At Its Best"

Every Paint manufacturer using Water-Ground Mica should be using "CONCORD" because:

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CALENDAR OF EVENTS

June 18–20. Thirty-fourth Annual Conference of the Chemical Institute of Canada, Winnepeg, Canada.

June 18–22. A. S. T. M. Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

June 18–22. Organic Coating Conference. The Gordon Research Conferences sponsored by the AAAS. New Hampton School, New Hampton, N. H.

Oct. 22–24. Thirteenth Annual Forum of the Packaging Institute, Hotel Commodore, New York City, N. Y.

Oct. 29–31. National Paint, Varnish and Lacquer Association Convention, Chalfonte-Haddon Hall, Atlantic City, N. J.

Nov. 1–3. Federation of Paint and Varnish Production Clubs, Chalfonte-Haddon Hall, Atlantic City, N. J. Paint Industries Show, Oct. 31–Nov. 3.

CLASSIFIED ADVERTISEMENTS

Rates: $.20 per word, except those seeking employment, for which rate is $.10 per word. Minimum: ten words. Address all replies to Box Number, c/o Paint and Varnish Production, 855 Avenue of the Americas, New York 1, New York.

Coating Chemist: Experienced Coating Chemist wanted for technical service contact work for a large pigment manufacturer. Box 110. *Paint and Varnish Production.*

•

James Morris Named Chief of Plasticizer Section of NPA

Mr. James J. Morris has just been appointed Chief of Plasticizers and Amines in the Aromatic Section, Chemicals Division of the National Production Authority in Washington.

Mr. Morris was formerly with The Fine Chemicals Division, Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation where his work involved the sales and development of plasticizers and solvents.

GENERAL SERVICE

(*From page 35*)

inspector is at each warehouse for inspection and sampling with additional inspectors being available on export and strategic and critical items.

Occasionally the FSS preinspects the facilities of the manufacturer before letting a contract—more usually the case with new bidders. Usually, however, purchases are let without prior check which places the burden on the manufacturer to see that his product conforms to the specification. If, upon test, the material is rejected, the manufacturer us usually given the opportunity to replace it. Under their work load pressure, the FSS inspectors frequently test to one failure and then reject. When the manufacturer reworks the materials and resubmits he may find another rejection on a completely different property which had not been examined for the first rejection.

It is the opinion of the FSS inspectors that approximately 85% of the rejections are caused by lack of production control by the manufacturer coupled with lack of inspection of his raw materials. About 10% of all paints, varnishes, and related materials are rejected with enamels having the highest rate of rejections. It is to be noted that the FSS is examining all purchases for conformance to specification whereas in past years the inspection was not as complete.

Personnel

The personnel engaged in paint activities for the Federal Supply Service are: Mr. Wiley Smith, Standards: Mr. August F. Nerlinger, Inspection; Mr. Edward L. Deal, Purchase; Mr. Max Miller, Stores and Distribution.

•

Commercial Solvents Promotes Thomas

E. Nelmes Thomas has been appointed assistant manager of the Sales Promotion division of Commercial Solvents Corporation, it has been announced by H. J. Henry, Vice President in Charge of Sales. Mr. Thomas became associated with Commercial Solvents in 1946 as Technical Writer.

Union Carbide and Carbon Executive Appointments

In a recent announcement by Fred H. Haggerson, president of the Union Carbide and Carbon Corp. the following executive appointments were made:

Morse G. Dial has been elected executive vice-president. In 1937 Mr. Dial became assistant secretary and treasurer of Union Carbide, and in 1945 he has been director, vice-president, and treasurer of Union Carbide and Carbon Corp.

Dr. George O. Crume, Jr. has been elected vice-president in charge of research of Union Carbide and Carbon Corp.

Dr. Crume will now head all of the research activities of Union Carbide. Since 1948 he has been vice-president in charge of chemical research for the corporation, and for many years a vice-president of Bakelite Company, and Carbide and Carbon Chemicals Company, both important Divisions of Union Carbide.

•

Kromall Manufactures Color Dispersions

The Kromall Chemical and Dispersions Corporation of 10–12 46th Avenue, Long Island City, is now manufacturing a complete line of color dispersions.

Previously, only white dispersions were manufactured, but because of demands for colors, the company expanded its facilities to meet the growing needs of paint and lacquer manufacturers and other industries requiring such products.

SYLOID 308 is a new flatting agent of tremendous importance for flat-finish lacquers. This synthetic silica is inert and insoluble, with particle size minutely controlled, to assure uniformity. Every shipment is exactly like the previous, and so the results are always the same. Use SYLOID 308 and realize new high standards in flatting efficiency, mill room economy, and film characteristics. Use our technical advisory staff. Write for information. *T. M. Reg. Applied For

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TECHNICAL Bulletins

RECONDITIONING DRUMS

The 4 page bulletin illustrates and describes the equipment and methods of cleaning the interior and exterior of drums as well as drum lids.

Some of the advantages of this process are said to be these: (1) better appearance inasmuch as paint, rust, and previous coatings are scoured away down to the bright, clean metal; (2) the finely etched surface, produced by the scouring action, provides a perfect anchor for bonding the protective coating to the metal; (3) rust and corrosion are deterred; (4) cleaning is faster; and (5) less labor, space and equipment are necessary. It is also pointed out that many steel drums that otherwise would have to be scrapped can be salvaged by Wheelabrator cleaning.

A free copy of this bulletin may be obtained by writing directly to American Wheelabrator and Equipment Corp., S. Byrkit Street, Mishawaka, Indiana.

METAL PAINTING

National Lead Co., 111 Broadway, New York 6, N. Y. has issued a 96 page booklet covering the various aspects of metal protection. The booklet is intended to serve as a guide to those concerned with the use and manufacture of paint as an engineering material for the protection of structural iron and steel against corrosion.

This handbook discusses from a practical and theoretical viewpoint corrosion mechanisms, surface preparation, the formulation, application and specifying of metal protective paints.

VINYL COATINGS

Protective and decorative coatings for all types of surfaces that have shown truly outstanding performances are described in a new 28-page booklet offered by Bakelite Company, a Division of Union Carbide and Carbon Corporation. The booklet, entitled "The Story of Surface Coatings Based on Vinylite Resins," discusses the many essential applications of these surface coatings and is illustrated with a wide selection of photographs.

Copies of this booklet are available to business executives by sending request to Bakelite Company, Department 1503, 300 Madison Avenue, New York 17, New York.

ALUMINUM FINISHES

Reynolds Metal Co., Louisville 1, Ky. has recently issued a hand book concerned with finishes for aluminum. Of an interest to paint manufacturers is a section on organic finishes. Such factors as surface preparation, primer coats, application, etc. are discussed fully.

SHELLAC

A free, eighteen page booklet, "Shellac—How To Use It," has just been printed and is being offered to anyone who writes the Shellac Information Bureau, 65 Pine Street, New York 5, N. Y. The illustrated booklet is full of helpful material on how to obtain the best possible finishes to wood furnishings, floors and other items requiring protective coats. Also included are the many other uses of this natural substance.

FUNGICIDES

Fungicides, types CQ based on Copper-8-Quinolate and MO based on mercury compounds are discussed in Technical Bulletin 33 issued by the Ferro Chemical Corp. of Bedford, Ohio.

COATINGS GLOSSARY

A revised glossary for the protective coatings industry has been issued by R-B-H Dispersions, Division of the Interchemical Corp., Bound Brook, N. J. The author of this glossary is L. J. Radi.

Contained are some thousand definitions of terms used in the coatings industry. In the case of materials, types, grades and common properties are given together with cross references.

CASEINS

A chart listing the properties and characteristics of 18 Protovac caseins and caseinates has been prepared by the Chemical Division of The Borden Company, 350 Madison Ave., New York 17, N. Y. for manufacturers of wallpaper coatings, sizings, leather finishes, printing inks, and other industries requiring water resistant binders, coatings or emulsifiers. The bulletin states that Protovac caseins and caseinates (solubilized caseins) are made by a flexible process allowing the use of a wide variety of modifying agents. Therefore casein products with new and different properties can be produced to match extremely varied requirements. Write for bulletin P-16-7D.

VARNISH COMPARATOR

A new folder released by Hellige, Inc., describes and illustrates the Hellige Varnish Comparator for determining colors of varnish, oils, resins, nitro-cellulose lacquers, and similar, transparent, colored liquids.

Included in the folder is a brief history of Hellige standards which traces their development from 1930 and quotes from reports presented before the Scientific Section of the National Paint and Varnish Lacquer Association. Copies of the folder, No. 605-40FP, are available from Hellige, Inc., 3718 Northern Blvd., Long Island City 1, N. Y.

STABILIZERS

A 10-page technical data sheet evaluates stabilizers for vinyl stocks. Two standard formulations were used—one containing resin, plasticizer, and stabilizer; the other resin, plasticizer, Chlorowax 40, and stabilizer. In general, vinyl stocks which contain Chlorowax 40 require a higher percentage of stabilizer to attain some degree of stability as compared with stocks containing no Chlorowax 40. Diamond Alkali Co., Technical Service Div., Cleveland 14, Ohio.

CAN LABELING

Four page bulletin on can labeling adhesives contains specific information on packaging adhesives. Paisley Products, Inc., 1770 Canalport Ave., Chicago 16, Ill.

ACRYLONITRILE

Industrial Chemicals Division of American Cyanamid Company announces the availability of a technical book on acrylonitrile. Entitled the "Chemistry of Acrylonitrile," the book is hard bound and comprises 96 pages. It is the first major piece published on acrylonitrile and its applications.

The new book discusses the synthesis, physical properties and chemical properties of acrylonitrile. It also summarizes the present and potential applications of the compound.

Notable among the present applications of acrylonitrile is its use in Buna-N synthetic rubber.

Acrylonitrile has been used in plastics where it contributes to hardness and to solvent resistance and prevents softening at high temperatures. It has also been found useful in surface coatings and as a viscosity modifier for oil well drilling compounds. Acrylonitrile is an exceptionally versatile and valuable chemical intermediate.

Copies of the new book, or additional information, may be obtained by writing on company letterhead to the Industrial Chemicals Division, Department NR, American Cyanmid Company, 30 Rockefeller Plaza, New York 20, New York.

PLATY PIGMENTS

Technical Bulletin No. 7 issued by the Wet Ground Mica Association, Inc., 420 Lexington Ave., New York 17, N. Y. deals with second test series on the effect of platy pigment extenders on the moisture resistance of paint films. In this test series, a more detailed study is made of the ranges where the addition of platy extender substance to a reactive paint pigment increases the moisture or salt-fog resistance of the paint.

CLEANING UNITS

Air cleaning equipment is presented in 20-page, 2 color bulletin. Six basic units are presented: low pressure spray washers; volute scrubbers; wet glass cell washers; cupola washers; rotary multi-stage scrubbers; and hydraulic scrubber towers. Models of each basic type are also presented. Buffalo Forge Company, Buffalo, N. Y.

CHEMICALS CATALOG

The Tennessee Eastman Co., division of the Eastman Kodak Co. of Kingsport, Tenn., has published the 1951 catalog on industrial chemicals. This edition includes specifications, properties and typical uses of all of the fifty-five industrial chemicals manufactured by the company. Of particular interest is solubility data covering the twenty of the twenty-three Eastman aromatic compounds.

RESIN DATA SHEETS

B. F. Goodrich Chemical Co., Rose Building, Cleveland, Ohio, has issued a data sheet on "Geon Resin 404." The publication lists physical and electrical properties of the vinyl resin and contains suggested applications.

PIGMENT CATALOG

A new catalog "Colors for Paint, Lacquer and Enamel" has been published by the Pigment Department, American Cyanamid Company, Calco Chemical Division, Bound Brook, New Jersey.

The new catalog lists selected Calco colored and white pigments and dyes considered to be of greatest use in the formulation and manufacture of paints, lacquers, and enamels, and related products.

It also features complete data describing the most important characteristics of each listed product, based on laboratory tests and application experience in the trade.

Hercules "Hercolyn" and "Abalyn" are liquid resinous esters of low vapor pressure, good alkali resistance, and wide compatibility. Both impart gloss and flow to compositions in which they are used.

"Hercolyn," hydrogenated methyl ester of rosin, is well established as a secondary plasticizer with both oil-type and chemical plasticizers in many lacquer compositions.

"Abalyn," methyl ester of rosin, is more reactive due to the presence of double-bond structures. It is frequently used in heat-converted compositions, for example in conjunction with phenol-aldehyde condensations to impart resistance to embrittlement.

Send for technical information and testing sample.

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IC51-3

PATENTS

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PATENTS AND COPYRIGHTS

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Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired to Lancaster, Allwine & Rommel.

Mustard Gas-Resistant Paint

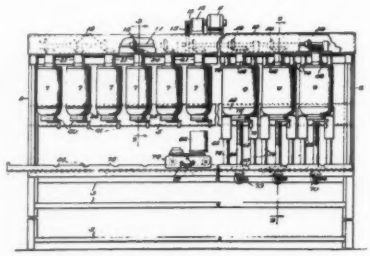
U. S. Patent 2,549,856. Harry Scherr, Baltimore, and Glenn A. Little, Bel Air, Md., assignors to the United States of America as represented by the Secretary of War.

A mustard gas-resistant paint comprising in admixture approximately nitrocellulose 8.2%, a urea formaldehyde resin 4.7%, tricresyl phosphate 1.6%, castor oil 1.6%, titanium dioxide containing 8% titanium phthalate 2.5%, lampblack 0.1%, aluminum powder 4.7%, and 76.6% of a solvent comprising ethyl acetate 16.2%, toluene 16.2%, ethylene glycol monoethyl ether 9.3%, ethylene glycol monobutylether 18.4%, ethyl lactate 6.1%, butyl alcohol 15.4%, and turpentine 18.4%.

Apparatus for Mixing Paint

U. S. Patent 2,548,106. William L. Hancock and Bernard Walsh, Chicago, Ill., assignors to Martin-Senour Company, Chicago, Ill., a corporation of Ohio.

In an apparatus for mixing and dispensing paints, a main frame, a supporting bracket on said frame including two spaced outwardly extending arms terminating in arcuate portions adapted to receive and support a removable paint container, a removable paint container adapted to be received by said arms and be supported thereby said container having radially extending lugs adapted to overlap said arms when rotated into dispensing position, and a pivoted releasable locking member mounted on said bracket, one end of said member being adapted to be received between said lugs on said container in dispensing position thereby to prevent rotation of said container.



Phenol-Modified Acetone Resins

U. S. Patent 2,538,883. Conrad F. Schimpe, Woodbridge, N. J., assignor, by mesne assignments, to Union Carbide and Carbon Corporation, a corporation of New York.

Process which comprises condensing a reaction mixture consisting of a mole of acetone and from one to two moles of formaldehyde as the essential reactive ingredients in the presence of an inorganic base establishing a pH between 9.5 and 11.5 and of about 10 to 35 per cent on the weight of the acetone of a monohydric phenol from the group consisting of phenol, cresols, xylenols and p-phenyl-phenol.

Plasticized P V C Resins

U. S. Patent 2,536,498. George L. Fraser, Springfield, Mass., assignor to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware.

A composition comprising a vinyl chloride-containing polymer and a compatible amount of an alkyl ester of sulfonyl dipropionic acid in which the alkyl groups contain 6–12 carbon atoms.

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ROTARY PUMPS

(*From page 9*)

flushed out before shut-down with solvent, blown out with compressed air, or cleaned out by disassembly. When pumping hot liquids which tend to solidify at room temperature, rotary pumps can be furnished with a steam-jacketed casing in order to melt the liquid in the pump upon starting (see fig. 3).

In most cases, rotary pumps can give trouble-free operation for many years, but it is important to realize on the more difficult applications, that the pump life will vary depending upon the individual case.

Installation

IN installing a rotary pump in a system, it is worthwhile to analyze the piping arrangement, especially in the suction line. While this type of pump is self-priming and can pull a relatively high suction lift, the more viscous liquids produce a friction loss in the piping which might result in an impossible suction condition. In these cases, the suction piping should be kept as large in diameter and small in length as possible with the minimum of fittings. The discharge piping, of course, should be given equal consideration, but for powering purposes, since the friction loss in the discharge line will not affect the liquid entering the the pump and the quantity pumped. Any appreciable drop-off in capacity of a rotary pump can usually be traced to the suction system in some way. Unless this loss in delivery is actually due to excessive pump wear, it is probably due to too high a suction lift, air being pumped along with the liquid, vaporization in the suction line due to high suction lift, air leakage in the suction system into the line or through the stuffing box. It is well to check all of these points when capacity drops off in order to arrive at the cause of the trouble.

In view of their wide range of application, combined with economical and efficient operation, Rotary pumps are becoming more widely used every day. Their particularly good adaptibility to the paint and varnish industry should make this type of pump a great factor in solving your present and future pumping problems.

PATENTS

(*From page 44*)

Asphalt Paint

U. S. Patent 2,542,608. Lewis A. Wrinkler, Scotch Plains, N. J., assignor to Standard Oil Development Company, a corporation of Delaware.

A coating composition consisting essentially of about 8% to 25% of a non-drying oil compatible with asphalt and substantially insoluble in mineral oils and about 92% to 75% of a phenol extract of "cycle oil" having a softening point of about 145° F.

Silver Paint

U. S. Patent 2,550,345. Robert B. Gray and Raymond H. Steele, Erie, Pa., assignors to Erie Resistor Corporation, Erie, Pa., a corporation of Pennsylvania.

A paint for producing a film having good electrical conductivity before drying and reduceable by firing after drying to a metallic silver film comprising silver oxide pigment, and an aqueous solution of a water soluble protective colloid.

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Have you ever asked yourself—when a paint or varnish made by my company is applied, what's the temperature going to be? how much sunlight will it get? how much time will have elapsed since packaging? will the humidity be high or low? what about ventilation? will the painter put it on thick or thin?

Fred Greenawald, Chief of the Nuodex Protective Coatings Service Laboratory, and Bill Gort, one of his assistants, have tracked down the effects of changes in these six important aspects of the physical environment of a newly applied film.

They studied seven formulas based on government specifications—an interior varnish, a spar varnish, a white house paint, a primer-sealer, a white architectural enamel, a yellow gloss enamel and a floor paint. Then, in a series of graphs, they plotted the influence of the variables of temperature, light, soaking period, humidity, air circulation and film thickness. And in a booklet called "Spotlighting the Variables of Drying", they set forth their interpretation of the results obtained.

At a time when raw material shortages and replacement products are the rule, we think you'll find "Spotlighting" a basic discussion applicable no matter what the formulation situation may be. Write for your free copy. It's a Nuodex Service we're anxious to render!

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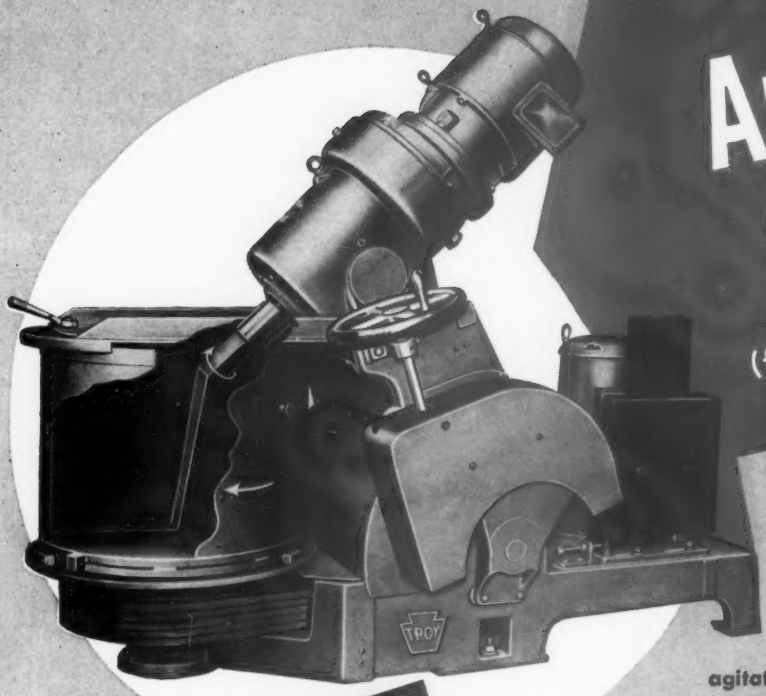

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abstracts

Shipbottom Paints

Verfkroniek, No. 3, page 66, March 1951. Translated by Dr. Walter B. Maass.

At a meeting of the Association for the knowledge of materials (Bond voor Materialenkennis) in Utrecht, Netherlands, a detailed survey of shipbottom paints was made by Ir. R. N. M. A. Malotaux. Mr. Malotaux started out with some historical remarks regarding the protection of ships against corrosion. Formulas for the manufacture of shipbottom paints go back as far as the seventeenth century. They consisted of pitch, rosin, and beeswax, mixed with mineral substances. Later shipbottoms were protected by copper. However, this procedure only worked with wooden ships. Copper and iron react electrochemically in seawater, therefore steel ships could not be protected that way. Asphalt coats prevent corrosion, but not the growth of fouling organisms. The problem is to formulate shipbottom paints which resist fouling and corrosion. This can only be achieved by two or three different paints coats, each coating having a special composition.

Steel must be carefully cleaned if the paints shall provide proper protection. The speaker cited research work done by Dr. Hudson, which prove the advantages of a phosphatized surface. Sanding also cleans the surface very well but causes slight deformation, which in itself can sometimes form a source for corrosion.

Mr. Malotaux then described three types of shipbottom paints, which are generally used in Holland and other countries.

Shipbottom Paints I: The first coat must be considered mainly an anticorrosive primer. Petroleum asphalts, alkyd and phenolic resins and chlorinated rubber are widely used as vehicles. Speaker does not believe that the nature of the pigments used in this paint is of major importance. As the vehicle has little permeability the pigments play a limited part. Red lead in oil should only be used on newly built ships, where the slow dry is not prohibitive. Ships already in use are not painted with Red Lead.

Shipbottom Paint II: This paint should fortify the undercoat, which forms the permanent basis for all later coatings. At the same time it also acts as groundcoat for Shipbottom Paint III. Sometimes Paint II contains toxic pigments to prevent growth.

Shipbottom Paint III: This is an antifouling paint. It yields a toxic substance to its surroundings to repress attachment and growth of fouling organisms. A vehicle of high permeability—mostly limed rosin or estergum—is used. In this connection the speaker mentioned research work by Ketchum and associates and gave their definition of the leaching rate.

As poisons in antifouling paint cuprous oxide, mercury oxide and arsenic are recommended. The speaker again emphasized that copper and cuprous oxide should never be used in Shipbottom Paint I. During the discussion Mr. W. Dorst mentioned zinc chromate wash primer, as used by the U.S. Navy.

Iron Mica in Anti-Rusting Paints

Fritsch B. Farbe und Lacke, 1950, 56, 61–64.

Practical experiments and tests of the German State Railways with anti-rusting top coats containing iron mica (on red lead priming coats) proved the considerable anti-rusting value of iron mica (from Waldenstein and Kärnten (Austria) as pigment. The tendency of the iron mica towards sedimentation was counteracted by primary treatment of the dry iron mica with a 2 percent alkali salt of a higher fatty acid in dilute hydrous solution. The product is then ground together with the oil vehicles employed.

Iron mica can also be used in connection with aluminum bronze. Anti-rusting top coats containing iron mica with a 5–10 percent addition of aluminum bronze and ground with a linseed oil–synthetic resin vehicle yielded exceptionally high rust protection and greatly increased durability.

Infra-Red Drying

Merz, A. Werkstoffe und Korrosion 1950, 1, 263–265.

The author discusses the various factors determining the success of infra-red drying for laboratory and commercial purposes including optimum construction of the equipment employed and the required properties of the paint and varnish materials suitable for this purpose.

The author mentions the following chief requirements in the construction of equipment, large or small:

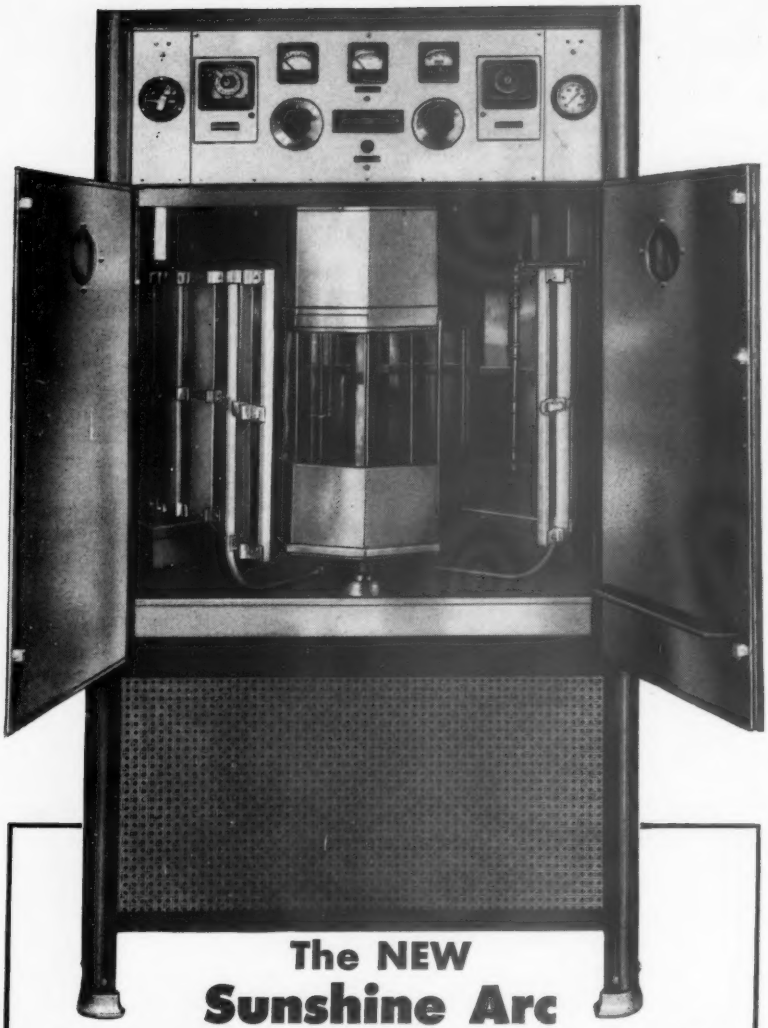
Minimum significance of the distances between film surfaces and radiators, minimum heat losses, maximum uniformity of radiation over large and small, straight and shaped surfaces, and optimum vapor removal and fresh air supply without reducing the heat efficiency of the equipment. Most modern constructions including the progressive assembly line types are built to these requirements.

The varnishes and lacquers used must allow rapid heating and rapid temperature changes—irrespective of the character of the metallic base surfaces—and maximum color fastness under the conditions involved. Many of the customary varnishes including the asphaltum varnishes, but excluding the oil varnishes, can be used for this purpose while in many cases changing of one or two components will render them suitable or improve their suitability considerably.

Salts of Polymethylol Phenols

R. W. Martin, General Electric Co., Pittsfield, Mass. Presented at Div. of Paint, Varnish, and Plastics Chemistry of the American Chemical Society at Chicago Meeting, Sept. 3–8, 1950.

This paper describes the preparation and separation of the sodium salts of the polymethylol derivatives of trifunctional phenols e.g., from phenols with both ortho and the para positions relative to the phenolic hydroxyl group open. The salts are prepared by reacting the phenol at room temperature or slightly higher with approximately 3 moles of formalin in the presence of a mole of caustic. When reaction is complete the salts are precipitated by diluting the reaction mixture with a suitable water-miscible organic solvent and separated by filtration. By this procedure sodium trimethyol phenate, and sodium trimethylol m-cresylate have been prepared for the first time in pure form. 3,5-xylenol, while theoretically capable of reacting with 3 moles of formaldehyde, gave under similar conditions only a dimethylol derivative. The properties of the salts are described and numerous reactions, many of which were used in establishing the structure of the salts, are given.



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Type XW is fully automatic and may safely be left in unattended operation overnight. If deionized water is to be used, aluminum spray piping can be furnished. The capacity of the stainless steel lined testing chamber is 54 panels. The machine is sturdily constructed and is shipped assembled, ready for connection.

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Corrosion Resistance of High-Purity Iron

Schikorr, G. Metalloberflache, 1950, 4, A76.

In an article published in the Metalloberfläche 1949, (3) p. A 218, H. Kalpers asserted that high-purity iron is clearly more resistant to corrosive influences than ordinary commercial irons or steels. Schikorr denies this while admitting that under controlled conditions high-purity iron is more resistant to solution by chemicals such as acid solutions, etc. This does not apply to actual atmospheric conditions, underwater corrosion, etc. There may be occasional exceptions, but these only confirm the rule.

Sulfonamide Resins

Scheele, W. Fredenhagen, M. and Timm, T. Kunststoffe 1949, 39, 109.

Investigations on the relations between chemical constitution and "glass formation" or sulfonamide resins have shown that the resins should not be considered macro-molecules but loosely combined groups of molecules, or sub-cooled fusions of trimeric N-methylen-aryl-sulfonamides with unchanged aryl sulfonamide. The authors describe the production of N-4-toluol-sulfonyl-sulfanilamid and benzol-1.3-disulfanilid.

Porosity Test of Paint Films

Roesler, H. Farbe und Lack 1949, 55, 42–46.

Porosity tests can be carried out 1) by testing the films without base surface and 2) by testing them on their base surface. The tests devised by Walker, Pitschaner, Preece and Dubpernell are based on the fact that on applying certain testing agents these tend to produce colored products of reaction at the points of porosity. The Blom test uses sulfate solution while Wagner employs cadmium sulfate as testing solution. Ritter covers a glass panel with a film of potassium chromate gelatine and applies the paint film on top of it. If the panel thus treated is then immersed in a dilute silver nitrate solution, silver chromate (easily determined) is then formed at the points of porosity. The Duffek-method of determining pores in the oxide layers on light metals uses solutions such as alizarin-sodium sulphite, employing electric current of 20 to 30 volts which induce electrophoretic colors within the pores. The electric process of Rossmann operates with a glass cylinder which is cemented to the test film. The cylinder is filled with a 3 percent solution of sodium chloride and is connected up with an alternating current circuit of 3 volts.

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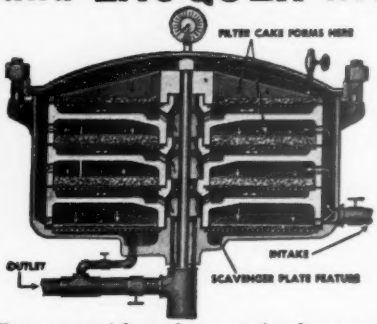

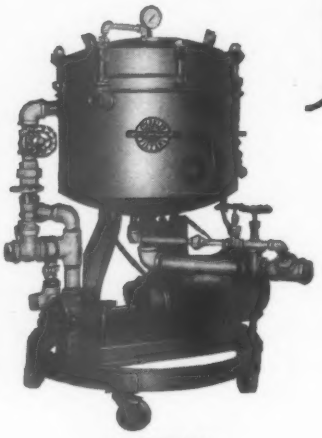

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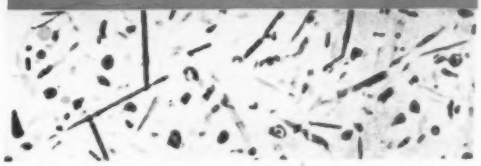
high

AZO ZZZ-22

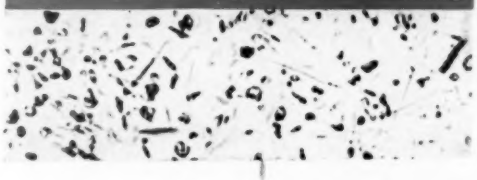
A high oil absorption Zinc Oxide having large Acicular Particles which gives heavy body



medium

AZO ZZZ-11

A medium oil absorption Acicular Zinc Oxide imparting exceptional weathering qualities to exterior paints

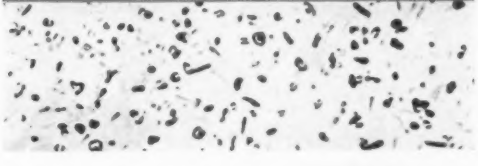


AZO acicular lead-free zinc oxide is a superior pigment available in a wide range of oil absorptions

low

AZO ZZZ-33

A definitely Acicular type with a lower oil absorption, but chemically identical with AZO ZZZ-11 and AZO ZZZ-22



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surface area

	GRADE	Blackness Index	Particle size millicrons	MASS TONE: Effective Surface Area: Runs per lb.	MASS TONE: Effective Surface Area: Square Meters per gram	Loading Capacity: Oil Absorption Venuto Method gals./100 lbs.	Covering Power: Tinting Strength Index	Total Surface Activity: DPG Absorption Index	Nature of Surface: pH	Nature of Surface: Analysis Moisture Free: Fixed Carbon %	Nature of Surface: Analysis Moisture Free: Volatile Matter %
CHANNEL BLACKS	Neo Spectra Mark I	240	10	29.4	262	280	95	100	2.9	83.8	16.2
	Neo Spectra Mark II*	220	13	22.5	201	257	95	98	3.0	85.3	14.7
	Super Spectra	216	13	22.5	201	277	95	66	4.2	92.1	7.9
	Neo Spectra Mark III	194	18	16.3	146	180	95	90	2.8	87.0	13.0
	Superba*	191	18	16.3	146	180	95	65	3.2	90.0	10.0
	Excelsior*	166	21	14.0	125	122	100	25	3.7	94.8	5.2
	No. 140 Black	160	24	12.2	109	107	96	23	3.2	92.3	7.7
	Raven 11*	157	25	11.7	105	103	95	17	3.5	93.8	6.2
FURNACE BLACKS	Statex B-12*	118	43	6.8	61	85	82	3	9.3	99.4	0.6
	Statex*	95	50	5.9	53	68	68	4	10.0	99.2	0.8
	Molacco*	58	83	3.5	31	47	50	2	10.1	99.5	0.5

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